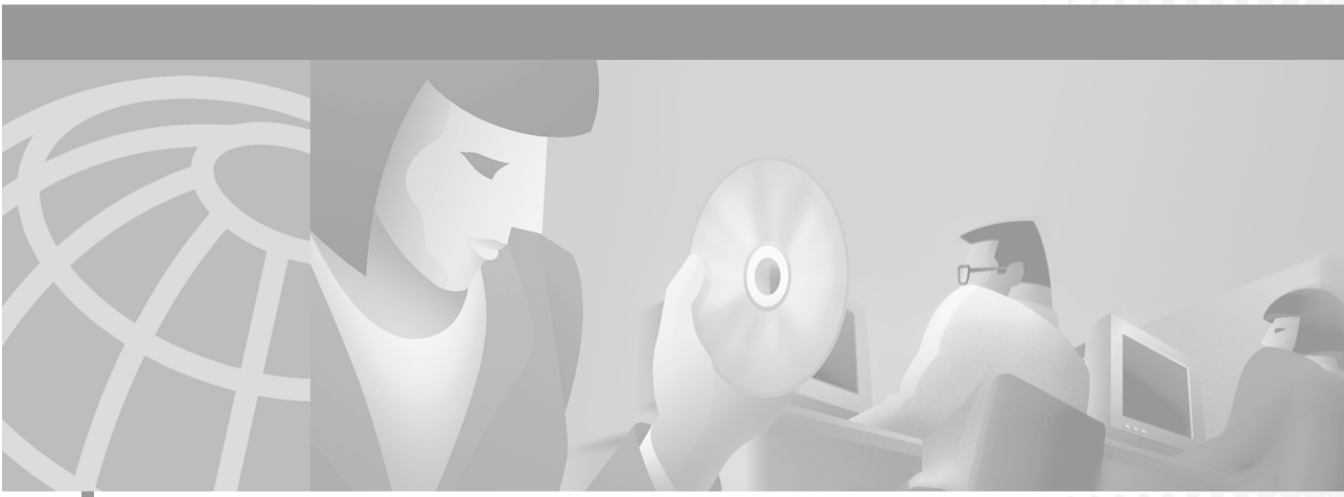

Catalyst 3550 Multilayer Switch Hardware Installation Guide

May 2002

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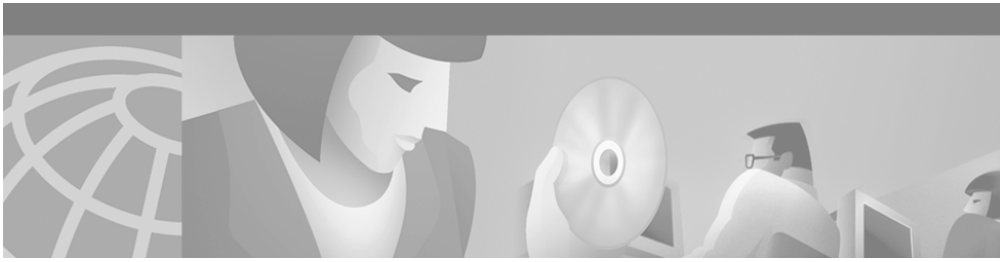

Preface

Audience

This guide is for the networking or computer technician responsible for installing the Catalyst 3550 multilayer switches. We assume that you are familiar with the concepts and terminology of Ethernet and local area networking.

Purpose

This guide documents the hardware features of the Catalyst 3550 family of multilayer switches. It describes the physical and performance characteristics of each switch, explains how to install a switch, and provides troubleshooting information.

This guide does not describe system messages that you might receive or how to configure your switch. For more information, refer to the *Catalyst 3550 Multilayer Switch Software Configuration Guide*, the *Catalyst 3550 Multilayer Switch Command Reference*, and the *Catalyst 3550 Multilayer Switch System Message Guide* on the Cisco.com Product Documentation home page. For information about the standard Cisco IOS Release 12.1 commands, refer to the IOS documentation set from the Cisco.com home page at **Service and Support** > **Technical Documents.**

Organization

This guide is organized into these chapters:

Chapter 1, "Product Overview," is a physical and functional overview of the Catalyst 3550 family of switches. It describes the switch ports, the standards they support, and the switch LEDs.

Chapter 2, "Installing and Starting the Switch," contains the procedures for installing the switch in a rack, on a wall, on a table, or shelf. It also describes installing Gigabit Interface Converter (GBIC) modules, how to power the switch, and how to make port connections.

Chapter 3, "Troubleshooting," describes how to identify and resolve some of the problems that might arise when installing the switch.

Appendix A, "Technical Specifications," lists the physical and environmental specifications for the switches and the regulatory agency approvals.

Appendix B, "Connector and Cable Specifications," describes the connectors, cables, and adapters that can be used to connect to the switch.

Appendix C, "Translated Safety Warnings," contains translations in various languages of the warnings in this guide.

Conventions

This document uses these conventions and symbols for notes, cautions, and warnings:

Note Means *reader take note*. Notes contain helpful suggestions or references to materials not contained in this manual.

Caution Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Warning **This warning symbol means *danger*. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. To see translations of the warnings that appear in this publication, refer to Appendix C, "Translated Safety Warnings."**

Waarschuwing **Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van standaard maatregelen om ongelukken te voorkomen. (Voor vertalingen van de waarschuwingen die in deze publicatie verschijnen, kunt u het aanhangsel C "Translated Safety Warnings" (Vertalingen van veiligheidsvoorschriften) raadplegen.)**

Varoitus **Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvistä vaaroista ja tavanomaisista onnettomuuksien ehkäisykeinoista. (Tässä julkaisussa esiintyvien varoitusten käännökset löydät liitteestä C "Translated Safety Warnings" (käännetyt turvallisuutta koskevat varoitukset).**

Attention **Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures. Avant d'accéder à cet équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures courantes de prévention des accidents. Pour obtenir les traductions des mises en garde figurant dans cette publication, veuillez consulter l'annexe intitulée C « Translated Safety Warnings » (Traduction des avis de sécurité).**

Warnung **Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu einer Körperverletzung führen könnte. Bevor Sie mit der Arbeit an irgendeinem Gerät beginnen, seien Sie sich der mit elektrischen Stromkreisen verbundenen Gefahren und der Standardpraktiken zur Vermeidung von Unfällen bewußt. (Übersetzungen der in dieser Veröffentlichung enthaltenen Warnhinweise finden Sie im Anhang mit dem Titel C “Translated Safety Warnings” (Übersetzung der Warnhinweise).)**

Avvertenza **Questo simbolo di avvertenza indica un pericolo. Si è in una situazione che può causare infortuni. Prima di lavorare su qualsiasi apparecchiatura, occorre conoscere i pericoli relativi ai circuiti elettrici ed essere al corrente delle pratiche standard per la prevenzione di incidenti. La traduzione delle avvertenze riportate in questa pubblicazione si trova nell’appendice C, “Translated Safety Warnings” (Traduzione delle avvertenze di sicurezza).**

Advarsel **Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du være oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker. (Hvis du vil se oversettelser av de advarslene som finnes i denne publikasjonen, kan du se i vedlegget C "Translated Safety Warnings" [Oversatte sikkerhetsadvarsler].)**

Aviso **Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos fisicos. Antes de começar a trabalhar com qualquer equipamento, familiarize-se com os perigos relacionados com circuitos eléctricos, e com quaisquer práticas comuns que possam prevenir possíveis acidentes. (Para ver as traduções dos avisos que constam desta publicação, consulte o apêndice C “Translated Safety Warnings” - “Traduções dos Avisos de Segurança”).**

¡Advertencia! **Este símbolo de aviso significa peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considerar los riesgos que entraña la corriente eléctrica y familiarizarse con los procedimientos estándar de prevención de accidentes. (Para ver traducciones de las advertencias que aparecen en esta publicación, consultar el apéndice titulado C "Translated Safety Warnings.")**

Varning! **Denna varningssymbol signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanligt förfarande för att förebygga skador. (Se förklaringar av de varningar som förekommer i denna publikation i appendix C "Translated Safety Warnings" [Översatta säkerhetsvarningar].)**

Related Publications

You can order printed copies of documents with a DOC-xxxxxx= number. For more information, see the "Ordering Documentation" section on page xxi.

These documents provide complete information about the switch and are available from this Cisco.com site:

http://www.cisco.com/univercd/cc/td/doc/product/lan/c3550/index.htm

- *Release Notes for the Catalyst 3550 Multilayer Switch* (not orderable but available on Cisco.com)

Note Switch requirements and procedures for initial configurations and software upgrades tend to change and therefore appear only in the release notes. Before installing, configuring, or upgrading the switch, refer to the release notes on Cisco.com for the latest information.

- *Catalyst 3550 Multilayer Switch Software Configuration Guide* (order number DOC-7811194=)
- *Catalyst 3550 Multilayer Switch Command Reference* (order number DOC-7811195=)

- *Catalyst 3550 Multilayer Switch System Message Guide* (order number DOC-7811196=)
- Cluster Management Suite (CMS) online help (available only from the switch CMS software)
- *Catalyst 3550 Multilayer Switch Hardware Installation Guide* (order number DOC-7811358=)
- *1000BASE-T Gigabit Interface Converter Installation Note* (not orderable but is available on Cisco.com)
- *Catalyst GigaStack Gigabit Interface Converter Hardware Installation Guide* (order number DOC-786460=)
- *Installation Notes for the CWDM Passive Optical System* (not orderable but available on Cisco.com)

Obtaining Documentation

The following sections provide sources for obtaining documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following URL:

http://www.cisco.com

Translated documentation is available at the following URL:

http://www.cisco.com/public/countries_languages.shtml

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Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which is shipped with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual subscription.

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  http://www.cisco.com/go/subscription

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http://www.cisco.com

Technical Assistance Center

The Cisco TAC is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two types of support are available through the Cisco TAC: the Cisco TAC Web Site and the Cisco TAC Escalation Center.

Inquiries to Cisco TAC are categorized according to the urgency of the issue:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.
- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No workaround is available.
- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No workaround is available.

Which Cisco TAC resource you choose is based on the priority of the problem and the conditions of service contracts, when applicable.

Cisco TAC Web Site

The Cisco TAC Web Site allows you to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC Web Site, go to the following URL:

http://www.cisco.com/tac

All customers, partners, and resellers who have a valid Cisco services contract have complete access to the technical support resources on the Cisco TAC Web Site. The Cisco TAC Web Site requires a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to the following URL to register:

http://www.cisco.com/register/

If you cannot resolve your technical issues by using the Cisco TAC Web Site, and you are a Cisco.com registered user, you can open a case online by using the TAC Case Open tool at the following URL:

http://www.cisco.com/tac/caseopen

If you have Internet access, it is recommended that you open P3 and P4 cases through the Cisco TAC Web Site.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses issues that are classified as priority level 1 or priority level 2; these classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer will automatically open a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to the following URL:

http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled; for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). In addition, please have available your service agreement number and your product serial number.

Product Overview

The Catalyst 3550 family of multilayer switches—also referred to as the switches—are stackable Ethernet switches to which you can connect workstations, Cisco IP Phones, and other network devices such as servers, routers, and other switches. These switches also can be deployed as backbone switches, aggregating Gigabit Ethernet traffic from other network devices.

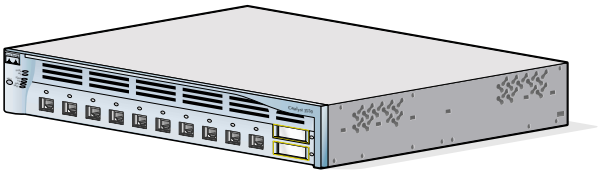
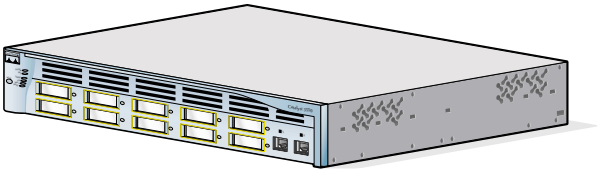
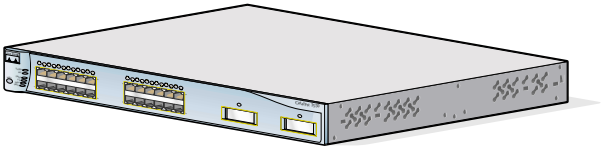
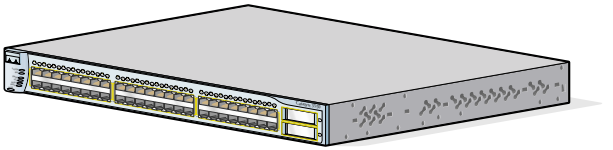
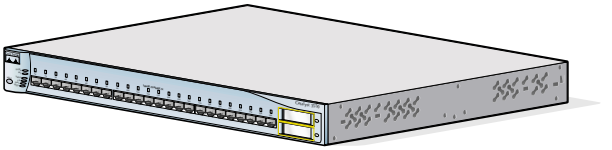
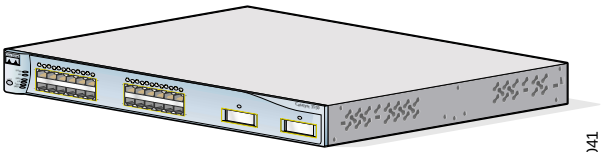
This chapter provides a functional overview of the Catalyst 3550 switch models. These topics are included:

- Features, page 1-1
- Front-Panel Description, page 1-5
- Rear-Panel Description, page 1-21
- Management Options, page 1-24

Features

Figure 1-1 shows the Catalyst 3550 switch models; Table 1-1 lists the features for the Catalyst 3550-12T and 3550-12G switches. Table 1-2 lists the features for the Catalyst 3550-24, 3550-24-DC, and 3550-48 switches. Table 1-3 lists the features for the Catalyst 3550-24-FX switch.

Figure 1-1 Catalyst 3550 Switch Models

Switch	Description	
WS-C3550-12T	10 autosensing 10/100/1000 Ethernet ports 2 GBIC[1]-based Gigabit module slots	
WS-C3550-12G	2 autosensing 10/100/1000 Ethernet ports 10 GBIC-based Gigabit module slots	
WS-3550-24-SMI	24 autosensing 10/100 Ethernet ports 2 GBIC-based Gigabit module slots	
WS-C3550-48-EMI	48 autosensing 10/100 Ethernet ports 2 GBIC-based Gigabit module slots	
WS-C3550-FX-SMI WS-C3550-24-FX-SMI	24 100BASE-FX ports 2 GBIC-based module slots	
WS-C3550-DC-SMI WS-C3550-24-DC-SMI	24 autosensing 10/100 Ethernet ports 2 GBIC-based Gigabit module slots DC-input power connector	

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1. GBIC = Gigabit Interface Converter

Table 1-1 Catalyst 3550-12T and 3550-12G Features

Feature	Description
Hardware	• 2 or 10 Gigabit Ethernet 10BASE-T/100BASE-TX/1000BASE-T ports and 2 or 10 GBIC-based Gigabit Ethernet slots • Supports GBIC modules – 1000BASE-SX GBIC – 1000BASE-LX/LH GBIC – 1000BASE-ZX GBIC – 1000BASE-T GBIC – GigaStack GBIC – CWDM GBICs
Configuration	• Supports Layer 3 routing • Autonegotiates speed and duplex operation on 10/100/1000 Ethernet ports • Supports up to 12,000 MAC addresses • Checks for errors on a received packet, determines the destination port, stores the packet in shared memory, and then forwards the packet to the destination port
Power Redundancy	• Supports connection for optional Cisco RPS 300 Redundant Power System that operates on AC input and supplies backup DC power to the switch

Table 1-2 Catalyst 3550-24, 3550-24-DC, and 3550-48 Features

Feature	Description
Hardware	• 24 or 48 10BASE-T/100BASE-TX Ethernet ports and 2 GBIC-based Gigabit Ethernet slots • Supports GBIC modules – 1000BASE-SX GBIC – 1000BASE-LX/LH GBIC – 1000BASE-ZX GBIC – 1000BASE-T GBIC – GigaStack GBIC – CDWM GBICs
Configuration	• Supports optional Layer 3 routing • Autonegotiates of speed and duplex operation on 10/100 Ethernet ports • Supports up to 8000 MAC addresses • Checks for errors on a received packet, determines the destination port, stores the packet in shared memory, and then forwards the packet to the destination port
Power Redundancy	• Supports connection for optional Cisco RPS 300 Redundant Power System that operates on AC input and supplies backup DC power to the switch (Catalyst 3550-24 and 3550-48 only) **Note** The Cisco RPS 300 does not support the Catalyst 3550-24-DC switch.

Table 1-3 Catalyst 3550-24-FX Features

Feature	Description
Hardware	• 24 100BASE-FX ports • Supports GBIC modules – 1000BASE-SX GBIC – 1000BASE-LX/LH GBIC – 1000BASE-ZX GBIC – 1000BASE-T GBIC – GigaStack GBIC – CWDM GBICs
Configuration	• Supports optional Layer 3 routing • Autonegotiates speed and duplex operation on 10/100 Ethernet ports • Supports up to 8000 MAC addresses • Checks for errors on a received packet, determines the destination port, stores the packet in shared memory, and then forwards the packet to the destination port
Power Redundancy	• Supports connection for optional Cisco RPS 300 Redundant Power System that operates on AC input and supplies backup DC power to the switch

Front-Panel Description

The front panel of the Catalyst 3550-12T and 3550-12G switches has 10/100/1000 RJ-45 ports, GBIC module slots, a set of LEDs, and a Mode button Figure 1-2 and Figure 1-3. The front panels of the Catalyst 3550-24 and 3550-48 switches have 10/100 RJ-45 ports, two GBIC module slots, a set of LEDs, and a Mode button, as shown in Figure 1-4 and Figure 1-5.

The Catalyst 3550-12T 10/100/1000 ports are numbered 1 through 10 (port 1 is on the far left, as shown in Figure 1-7), and the GBIC port numbers are 11 (top) and 12 (bottom). The Catalyst 3550-12G GBIC ports are grouped in pairs. The first member of the pair (port 1) is above the second member (port 2) on the far left, as shown in Figure 1-8. Port 3 is above port 4, and so on. The 10/100/1000 ports are numbered 11 and 12.

The Catalyst 3550-24, 3550-48, and 3550-24-DC 10/100 ports are grouped in pairs. The first member of the pair (port 1) is above the second member (port 2) on the far left, as shown in Figure 1-9 and Figure 1-10. Port 3 is above port 4, and so on. The GBIC port numbers are 1 (left) and 2 (right).

The Catalyst 3550-24-FX 100BASE-FX ports are numbered 1 through 24 (port 1 is on the far left , as shown in Figure 1-11) and the GBIC port numbers are 1 (top) and 2 (bottom).

Figure 1-2 Catalyst 3550-12T Front Panel

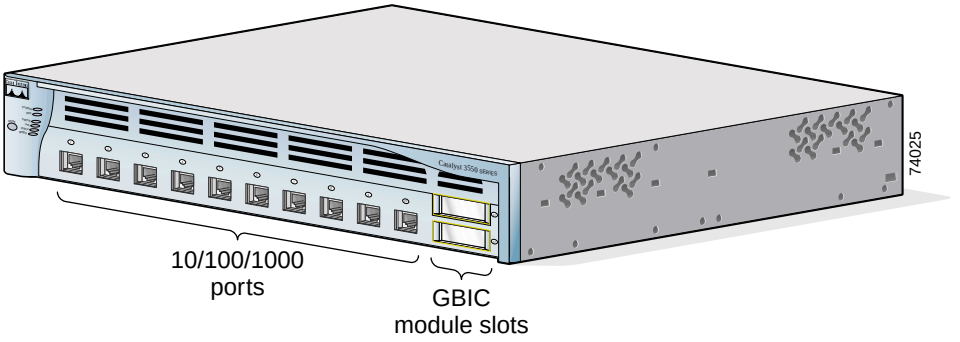


Figure 1-3 Catalyst 3550-12G Front Panel

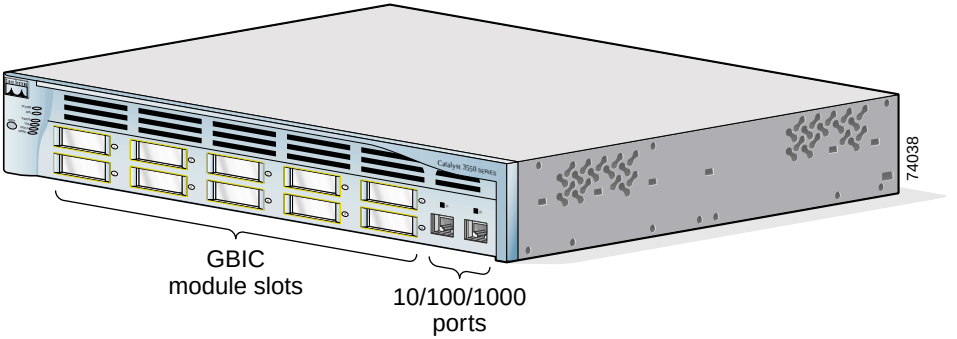


Figure 1-4 Catalyst 3550-24 and Catalyst 3550-24-DC Front Panel

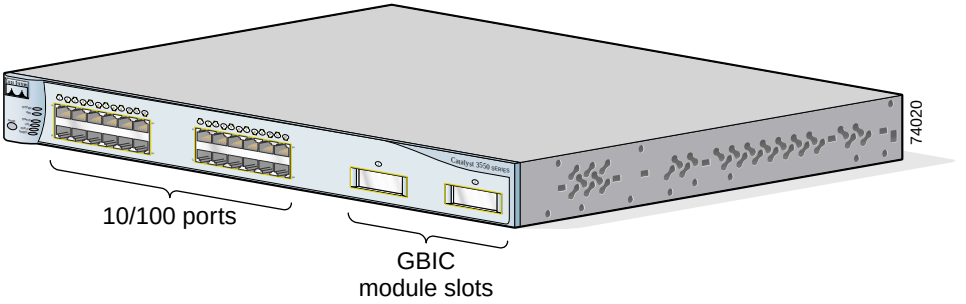


Figure 1-5 Catalyst 3550-48 Front Panel

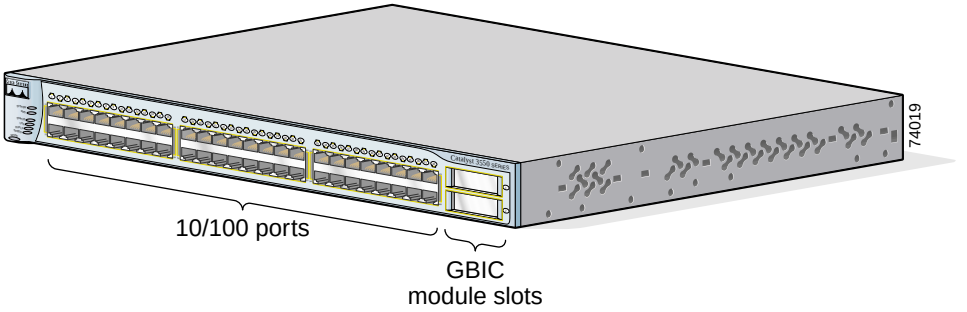
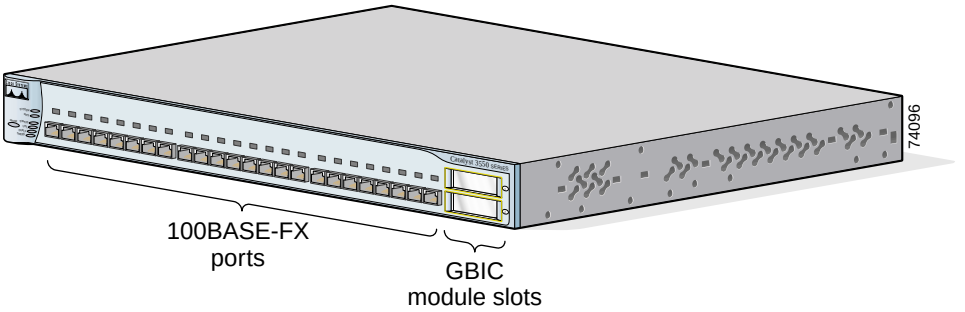


Figure 1-6 Catalyst 3550-24-FX Front Panel



10/100 and 10/100/1000 Ports

You can set the 10/100 and 10/100/1000 ports on the switch to operate in any combination of half duplex, full duplex, 10 Mbps, 100 Mbps, or 1000 Mbps (1000 Mbps if so equipped). You can also set these ports for speed and duplex autonegotiation in compliance with IEEE 802.3AB. (The default setting is autonegotiate.) When set for autonegotiation, the port senses the speed and duplex settings of the attached device and advertises its own capabilities. If the connected device also supports autonegotiation, the switch port negotiates the best connection (that is, the fastest line speed that both devices support and full-duplex transmission if the attached device supports it) and configures itself accordingly. In all cases, the attached device must be within 100 meters.

Note 100BASE-TX and 1000BASE-T traffic requires Category 5 cable. 10BASE-T traffic can use Category 3 or Category 4 cables.

When connecting the switch to workstations, servers, routers, and Cisco IP Phones, be sure that the cable is a straight-through cable. When connecting the switch to switches or hubs, use a crossover cable. When using a straight-through or crossover cable for 1000BASE-T connections, be sure to use a twisted four-pair, Category 5 cable for proper operation. Pinouts for the cables are described in Appendix B, "Connector and Cable Specifications."

100BASE-FX Ports

The 100BASE-FX ports use 50/125- or 62.5/125-micron multimode fiber-optic cabling. In full-duplex mode, these ports only operate at 100 Mbps.

In full-duplex mode (the default), the cable length from a switch to an attached device cannot exceed 6562 feet (2 kilometers).

You can connect a 100BASE-FX port to an SC or ST port on a target device by using one of the MT-RJ fiber-optic patch cables listed in Table 1-4. Use the Cisco part numbers in Table 1-4 to order the patch cables that you need.

Table 1-4 MT-RJ Patch Cables for 100BASE-FX Connections

Type	Cisco Part Number
1-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-1M
3-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-3M
5-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-5M
1-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-1M
3-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-3M
5-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-3M

GBIC Module Slots

The GBIC module slots support these modules to provide flexibility in media and distance options:

- 1000BASE-T GBIC module for copper connections of up to 100 meters.
- 1000BASE-SX GBIC module for fiber-optic connections of up to 550 meters (multimode only.)
- 1000BASE-LX/LH GBIC module for fiber-optic connections of up to 10 kilometers (single mode) or 550 kilometers (multimode.)
- 1000BASE-ZX GBIC module for fiber-optic connections of up to 100 kilometers (single mode only.)
- Coarse Wave Division Multiplexing (CWDM) GBIC modules for fiber-optic connections of up to 120 kilometers (single mode only). For information about the CWDM GBIC modules, refer to the *Installation Notes for the CWDM Passive Optical System* (not orderable but available on Cisco.com)
- GigaStack GBIC module for creating a 1-Gbps stack configuration of up to nine supported switches. The GigaStack GBIC supports one full-duplex link (in a point-to-point configuration) or up to nine half-duplex links (in a stack configuration) to other Gigabit Ethernet devices. When you use the required Cisco proprietary signaling and cabling, the maximum distance for a GigaStack GBIC-to-GigaStack GBIC connection is 1 meter. Refer to your GigaStack GBIC documentation for more information on supported switches.

Note Cisco-approved GBIC modules have a serial EEPROM that contains the module serial number, the vendor name and ID, a unique security code, and cyclic redundancy check (CRC). When a GBIC is inserted in the switch, the switch software reads the EEPROM to check the serial number, vendor name and ID, and recompute the security code and CRC. If the serial number, the vendor name or ID, security code, or CRC is invalid, the switch places the interface in an error-disabled state.

Note If you are using a non-Cisco approved GBIC module, remove the GBIC module from the switch, and replace it with a Cisco-approved module.

For more information about GBICs, refer to the documentation included with your GBIC.

LEDs

You can use the switch LEDs to monitor switch activity and its performance. Figure 1-7 and Figure 1-8 show the Catalyst 3550-12T and 3550-12G LEDs and the Mode button that you use to select one of the port modes. Figure 1-9, Figure 1-10, and Figure 1-11 show the Catalyst 3550-24, 3550-24-DC, 3550-48, and 3550-24-FX LEDs and the Mode button that you use to select one of the port modes.

All of the LEDs described in this section except the utilization meter (UTIL) are visible on the Cluster Management Suite (CMS) home page. The *Catalyst 3550 Multilayer Switch Software Configuration Guide* describes how to use CMS to configure and monitor individual switches and switch clusters.

Figure 1-7 Catalyst 3550-12T LEDs

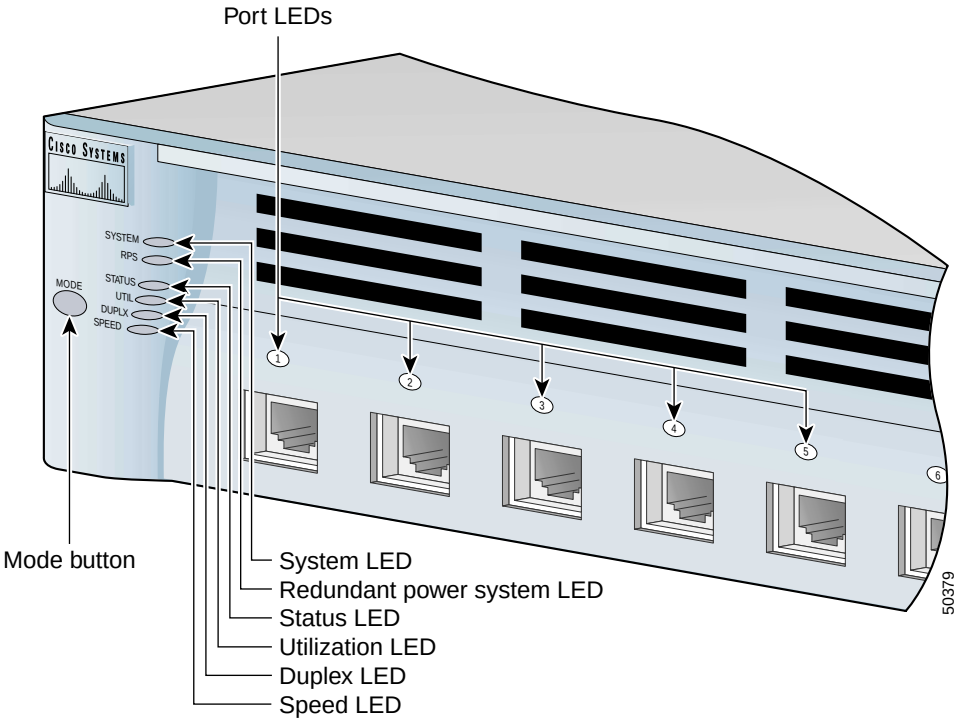


Figure 1-8 Catalyst 3550-12G LEDs

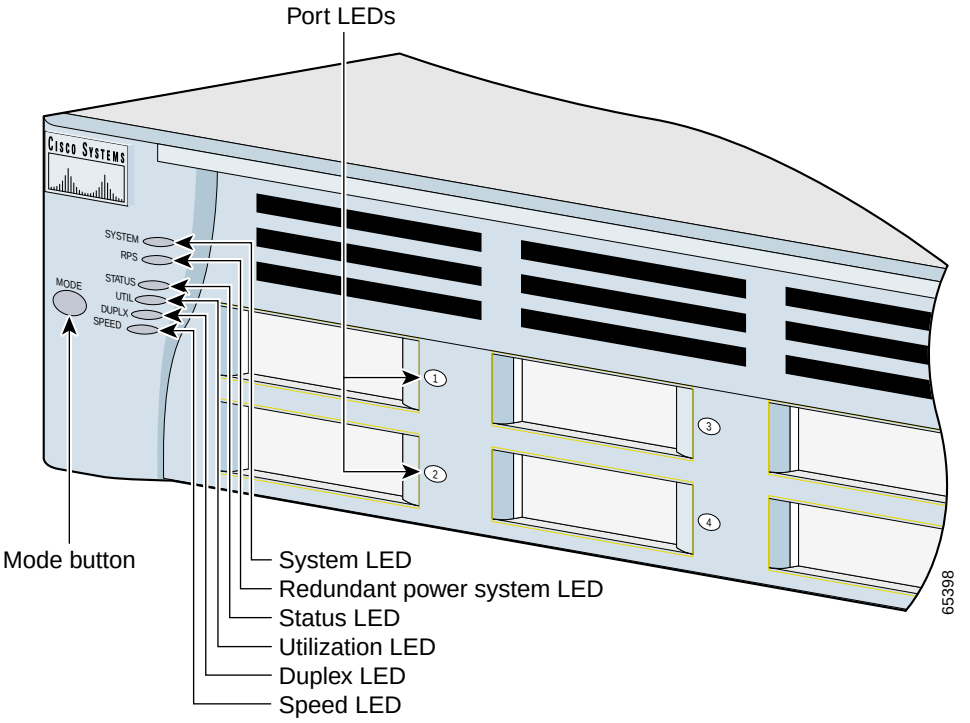


Figure 1-9 Catalyst 3550-24 and 3550-24-DC LEDs

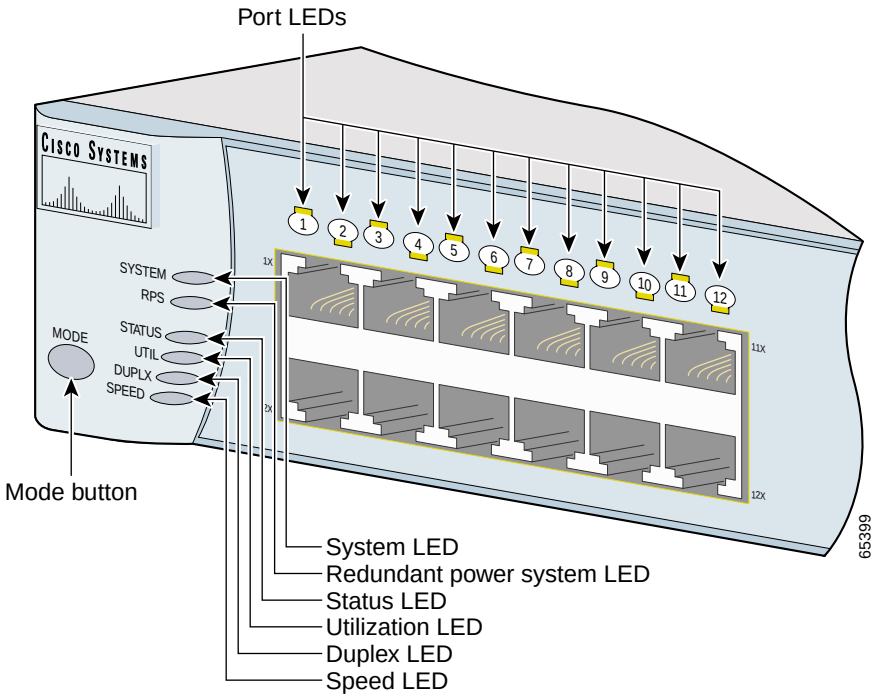


Figure 1-10 Catalyst 3550-48 LEDs

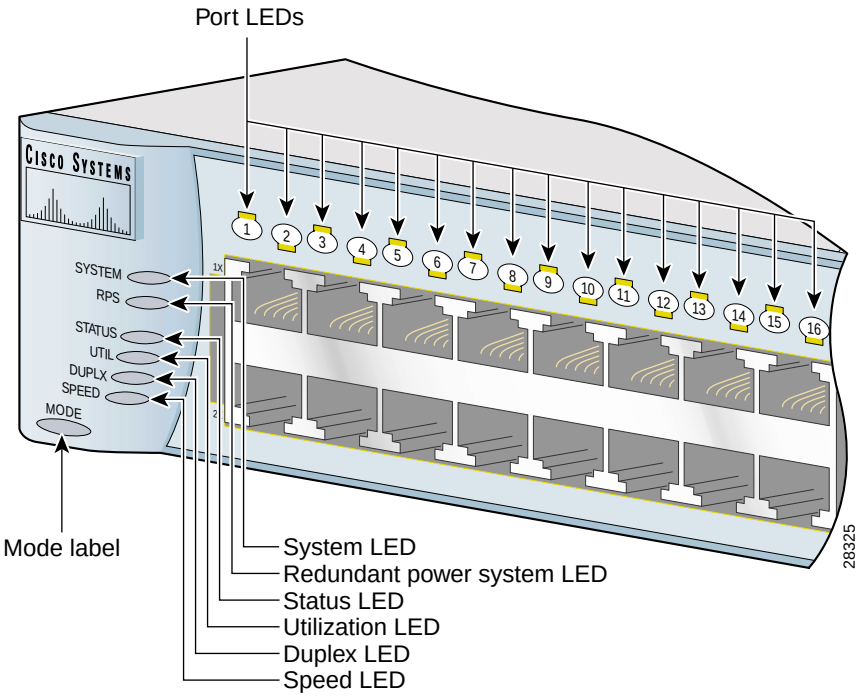
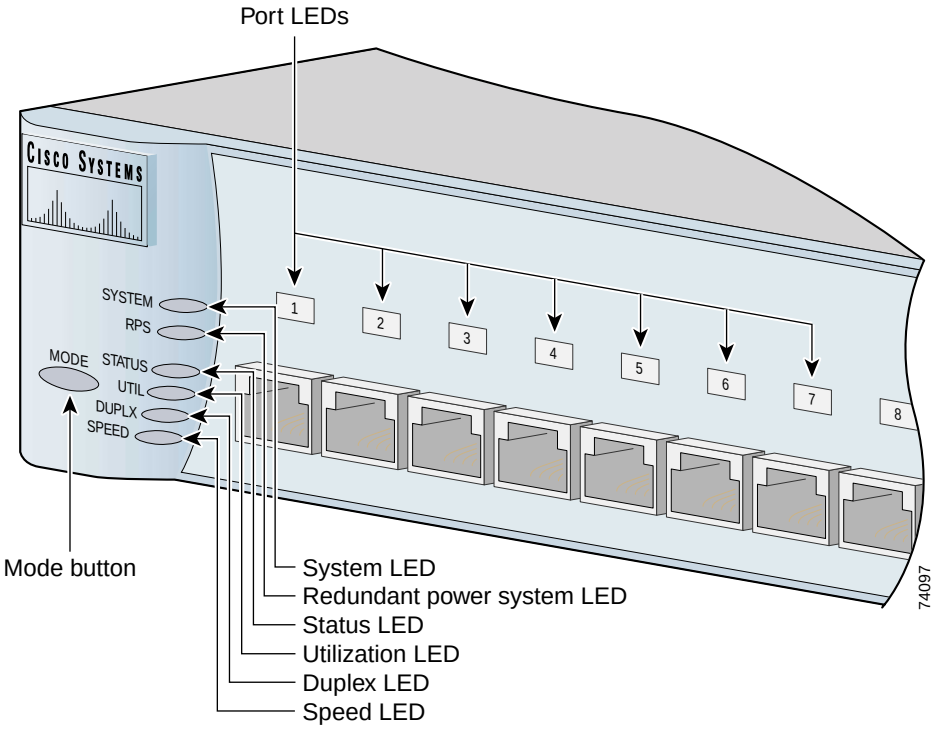


Figure 1-11 Catalyst 3550-24-FX LEDs



System LED

The System LED shows whether the system is receiving power and is functioning properly. Table 1-5 lists the LED colors and their meanings.

Table 1-5 System LED

Color	System Status
Off	System is not powered on.
Green	System is operating normally.
Amber	System is receiving power but is not functioning properly.

For information on the System LED colors during power-on self-test (POST), see the "Powering On the Switch" section on page 2-24.

RPS LED

The RPS LED shows the RPS status. Table 1-6 lists the LED colors and their meanings.

Table 1-6 RPS LED

Color	RPS Status
Off	RPS is off or not properly connected.
Solid green	RPS is connected and ready to provide back-up power, if required.
Flashing green	RPS is connected but is unavailable because it is providing power to another device (redundancy has been allocated to a neighboring device).
Solid amber	The RPS is in standby mode or in a fault condition. Press the Standby/Active button on the RPS, and the LED should turn green. If it does not, the RPS fan could have failed. Contact Cisco Systems.
Flashing amber	The internal power supply in a switch has failed, and the RPS is providing power to the switch (redundancy has been allocated to this device).

For more information about the Cisco RPS 300, refer to the *Cisco RPS 300 Redundant Power System Hardware Installation Guide*.

Port LEDs and Modes

Each RJ-45 port and GBIC module slot has a port LED. These port LEDs, as a group or individually, display information about the switch and about the individual ports. The port modes determine the type of information displayed through the port LEDs. Table 1-7 lists the mode LEDs and their associated port mode and meaning.

To select or change a mode, press the Mode button (or Mode label on the Catalyst 3550-48 switch) until the desired mode is highlighted. When you change port modes, the meanings of the port LED colors also change. Table 1-8 explains how to interpret the port LED colors in different port modes.

Table 1-7 Port Mode LEDs

Mode LED	Port Mode	Description
STATUS	Port status	The port status. This is the default mode.
UTIL	Switch utilization	The current bandwidth in use by the switch. (See Figure 1-12 through Figure 1-16.)
DUPLX	Port duplex mode	The port duplex mode: full duplex or half duplex.
SPEED	Port speed	The port operating speed: 10, 100, or 1000 Mbps.

Table 1-8 Meaning of LED Colors in Different Modes on the Switch

Port Mode	LED Color	Meaning
STATUS (port status)	Off	No link, or port was administratively shut down.
	Solid green	Link present.
	Flashing green	Activity. Port is transmitting or receiving data.
	Alternating green-amber	Link fault. Error frames can affect connectivity, and errors such as excessive collisions, CRC errors, and alignment and jabber errors are monitored for a link-fault indication.
	Solid amber	Port is blocked by Spanning Tree Protocol (STP) and is not forwarding data. **Note** After a port is reconfigured, the port LED can remain amber for up to 30 seconds as STP checks the switch for possible loops.
	Flashing amber	Port is blocked by STP and is transmitting or receiving packets.
UTIL (utilization)	Green	The port LEDs display backplane utilization on a logarithmic scale. See Figure 1-12 and Figure 1-13 for details on the Catalyst 3550-12T and 3550-12G switches. See Figure 1-14 and Figure 1-15 for details on the Catalyst 3550-24 and 3550-48 switches.
	Amber	The peak total backplane utilization over the last 24 hours.
DUPLX (duplex)	Off	Port is operating in half duplex.
	Green	Port is operating in full duplex.
SPEED	**10/100 and 10/100/1000 ports**	
	Off	Port is operating at 10 Mbps.
	Green	Port is operating at 100 Mbps.
	Flashing green	Port is operating at 1000 Mbps.
	GBIC ports	
	Off	Port is not operating.
	Flashing green	Port is operating at 1000 Mbps.

Bandwidth Utilization

The UTIL mode on the switch shows the current bandwidth in use by the switch. If all possible port LEDs are green, bandwidth utilization is in the 50 to 100% range. Every port LED that is off (black) divides this range by two. For specific switches, see Figure 1-12 through Figure 1-16.

Figure 1-12 shows the bandwidth utilization percentages displayed by the LEDs on the Catalyst 3550-12T switch. If all port LEDs on the switch are green, the switch is using 50 percent or more of its total bandwidth. If port LEDs 1 through 11 are green, the switch is using between 25 and 50 percent of its total bandwidth. If port LEDs 1 through 10 are green, the switch is using 12.5 to 25 percent of its total bandwidth capacity, and so on. Amber LEDs indicate peak utilization of the switch over the last 24 hours.

Figure 1-12 Bandwidth Utilization for the Catalyst 3550-12T Switch

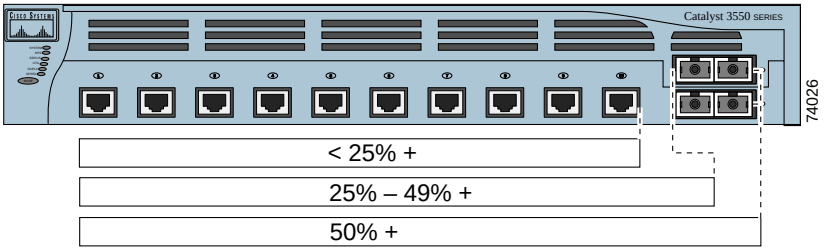


Figure 1-13 shows the bandwidth utilization percentages displayed by the LEDs on the Catalyst 3550-12G switch. If all port LEDs on the switch are green, the switch is using 50 percent or more of its total bandwidth. If port LEDs 1 through 11 are green, the switch is using between 25 and 50 percent of its total bandwidth. If port LEDs 1 through 10 are green, the switch is using 12.5 to 25 percent of its total bandwidth capacity, and so on. Amber LEDs indicate peak utilization of the switch over the last 24 hours.

Figure 1-13 Bandwidth Utilization for the Catalyst 3550-12G Switch

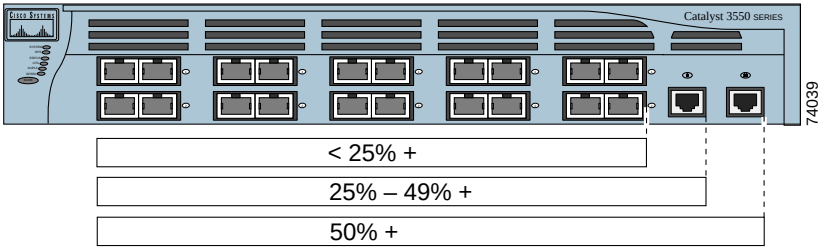


Figure 1-14 shows the bandwidth utilization percentages displayed by the LEDs on the Catalyst 3550-24 switch. If all port LEDs on the switch are green, the switch is using 50 percent or more of its total bandwidth. If port LEDs 1 through 24 and GBIC port 1 LED are green, the switch is using between 25 and 50 percent of its total bandwidth. If port LEDs 1 through 24 are green, the switch is using 12.5 to 25 percent of its total bandwidth capacity, and so on. Amber LEDs indicate the peak utilization of the switch over the last 24 hours.

Figure 1-14 Bandwidth Utilization for the Catalyst 3550-24 and 3550-24-DCSwitch

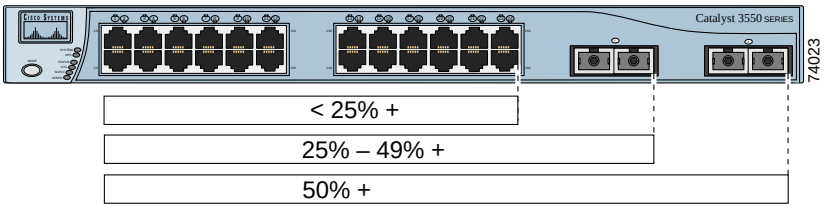


Figure 1-15 shows the bandwidth utilization percentages displayed by the LEDs on the Catalyst 3550-24 and 3550-24-DC switches. If all port LEDs on the switch are green, the switch is using 50 percent or more of its total bandwidth. If port LEDs 1 through 48 and GBIC port 1 LED are green, the switch is using between 25 and 50 percent of its total bandwidth. If port LEDs 1 through 48 are green, the switch is using 12.5 to 25 percent of its total bandwidth capacity, and so on. Amber LEDs indicate the peak utilization of the switch over the last 24 hours.

Figure 1-15 Bandwidth Utilization for the Catalyst 3550-48 Switch

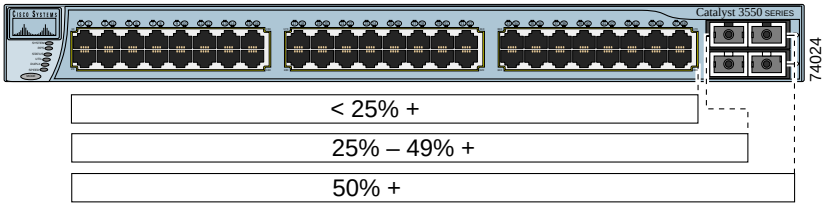
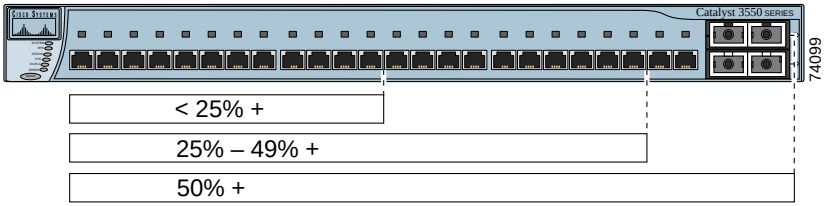


Figure 1-16 shows the bandwidth utilization percentages displayed by the LEDs on the Catalyst 3550-24-FX switch. If all port LEDs and GBIC LEDs on the switch are green, the switch is using 50 percent or more of its total bandwidth. If port LEDs 1 through 24 and GBIC port 1 LED are green, the switch is using between 25 and 50 percent of its total bandwidth. If port LEDs 1 through 24 are green, the switch is using 12.5 to 25 percent of its total bandwidth capacity, and so on. Amber LEDs indicate the peak utilization of the switch over the last 24 hours.

Figure 1-16 Bandwidth Utilization for the Catalyst 3550-24-FX switch



Rear-Panel Description

Other than the Catalyst 3550-24-DC switch, the switch rear panels have an AC power connector, an RPS connector, and an RJ-45 console port, which are described in this section. (See Figure 1-17 and Figure 1-18.)

Figure 1-17 Catalyst 3550-12T and 3550-12G Rear Panel

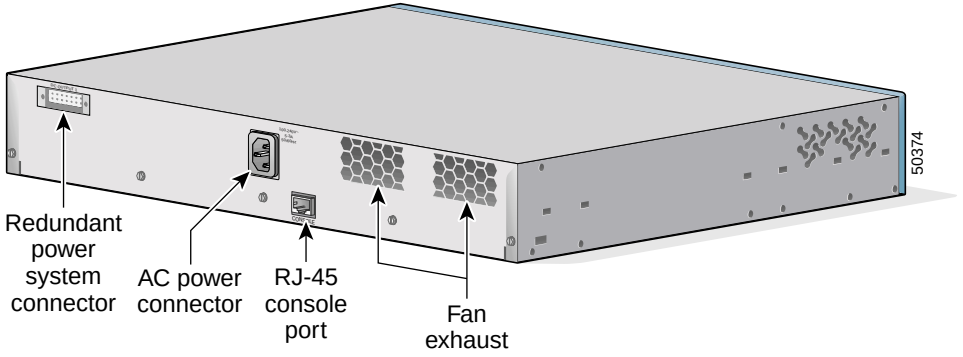
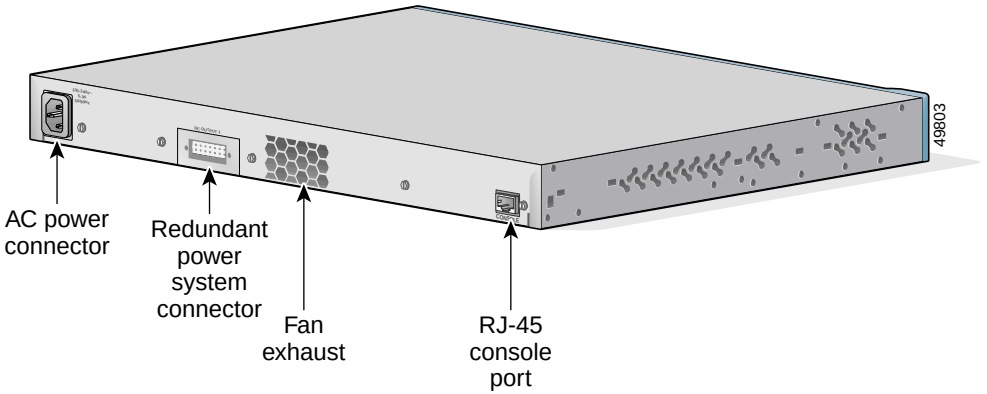
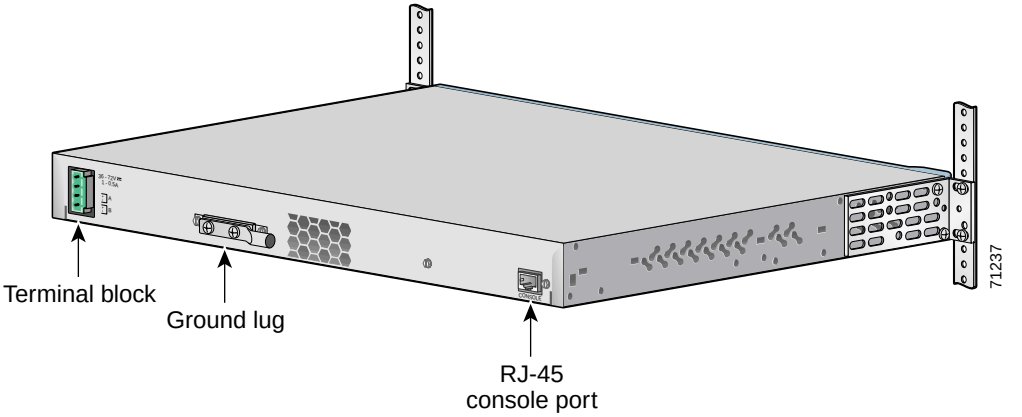


Figure 1-18 Catalyst 3550-24, 3550-48, and 3550-24-FX Rear Panel



The rear panel of the 3550-DC has a DC power connector (also referred to as the terminal block header), an RJ-45 console port, and a ground lug. (See Figure 1-19.) The switch is shipped with a terminal block plug inserted into the DC power connector.

Figure 1-19 Catalyst 3550-24-DC Rear Panel



Power Connectors

The switch is powered through the internal power supply. You can also connect the Cisco RPS 300 Redundant Power System to provide backup power if the switch internal power supply should fail.

Note The Catalyst 3550 switch and the Cisco RPS 300 should be connected to the same AC power source.

Internal Power Supply Connector

The internal power supply is an autoranging unit that supports input voltages between 100 and 240 VAC. Use the supplied AC power cord to connect the AC power connector to an AC power outlet.

Cisco RPS Connector

The Cisco RPS 300 (model PWR300-AC-RPS-N1) supports the Catalyst 3550 family of switches. The Cisco RPS 300 has two output levels: –48V and 12V with a total maximum output power of 300W. Use the supplied RPS connector cable to connect the RPS to the switch.

Note The Cisco RPS 300 does not support the Catalyst 3550-24-DC switch.

Warning **Attach only the Cisco RPS 300 (model PWR300-AC-RPS-N1) to the RPS receptacle.**

The RPS is a redundant power system that can support six external network devices and provides power to one failed device at a time. It automatically senses when the internal power supply of a connected device fails and provides power to the failed device, preventing loss of network traffic. For more information on the Cisco RPS 300, refer to the *Cisco RPS 300 Redundant Power System Hardware Installation Guide*.

Console Port

You can connect the switch to a PC by means of the console port and the supplied RJ-45-to-DB-9 female cable. If you want to connect the switch console port to a terminal, you need to provide an RJ-45-to-DB-25 female DTE adapter. You can order a kit (part number ACS-DSBUASYN=) containing that adapter from Cisco. For console port and adapter pinout information, see the "Cable and Adapter Specifications" section on page B-7.

Management Options

The Catalyst 3550 switches offer several management options:

- Cluster Management Suite (CMS)

  CMS is a graphical user interface that can be launched from anywhere in your network through a web browser such as Netscape Communicator or Microsoft Internet Explorer. CMS is already installed on the switch, and no additional installation is required. From CMS, you can fully configure and monitor a switch or switch clusters, display network topologies to gather link information, and display switch images to modify switch- and port-level

settings. For more information, refer to the *Catalyst 3550 Multilayer Switch Software Configuration Guide*, and the *Release Notes for the Catalyst 3550 Multilayer Switch* on Cisco.com, and the online help for this application.

- Cisco IOS command-line interface (CLI)

  The switch CLI is based on Cisco IOS software and is enhanced to support desktop-switching features. You can fully configure and monitor the switch and switch cluster members from the CLI. You can access the CLI either by connecting your management station directly to the switch console port or by using Telnet from a remote management station. Refer to the *Catalyst 3550 Multilayer Switch Command Reference* on Cisco.com for more information.

- CiscoView application

  The CiscoView device-management application displays the switch image that you can use to set configuration parameters and to view switch status and performance information. The CiscoView application, which you purchase separately, can be a standalone application or part of a Simple Network Management Protocol (SNMP) platform. Refer to the CiscoView documentation for more information.

- SNMP network management

  You can manage switches from a SNMP-compatible management station that is running platforms such as HP OpenView or SunNet Manager. The switch supports a comprehensive set of Management Information Base (MIB) extensions and four Remote Monitoring (RMON) groups. Refer to the *Catalyst 3550 Multilayer Switch Software Configuration Guide* on Cisco.com and the documentation that came with your SNMP application for more information.

- Cisco Intelligence Engine 2100 (IE2100)

  Cisco IE200 Series Configuration Registrar is a network management device that works with embedded CNS agents in the switch software. You can automate initial configurations and configuration updates by generating switch-specific configuration changes, sending them to the switch, executing the configuration change, and logging the results.

Network Configurations

Refer to the *Catalyst 3550 Multilayer Switch Software Configuration Guide* on Cisco.com for network configuration concepts and examples of using the switch to create dedicated network segments and interconnecting the segments through Gigabit Ethernet connections.

CHAPTER 2

Installing and Starting the Switch

This chapter describes how to install and start your switch, make connections to the switch, and how to interpret the power-on self-test (POST) that ensures proper operation. Read the topics and perform the procedures in the order that they are presented:

- Preparing for Installation, page 2-2
- Installing the Switch, page 2-8
- Installing the GBIC Modules, page 2-22
- Powering On the Switch, page 2-24
- Connecting to the 10/100 and 10/100/1000 Ports, page 2-34
- Connecting to 100BASE-FX Ports, page 2-36
- Connecting to the GBIC Module Ports, page 2-38
- Connecting a PC or Terminal to the Console Port, page 2-40
- Where to Go Next, page 2-42

Preparing for Installation

This section covers these topics:

- Warnings, page 2-2
- EMC Regulatory Statements, page 2-4
- Site Requirements, page 2-6
- Verifying Package Contents, page 2-7

Warnings

These warnings are translated into several languages in Appendix C, "Translated Safety Warnings."

Warning **This equipment is to be installed and maintained by service personnel only as defined by AS/NZS 3260 Clause 1.2.14.3 Service Personnel.**

Warning **Only trained and qualified personnel should be allowed to install or replace this equipment.**

Warning **Read the installation instructions before you connect the system to its power source.**

Warning **Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.**

Warning **Do not stack the chassis on any other equipment. If the chassis falls, it can cause severe bodily injury and equipment damage.**

Warning **The plug-socket combination must be accessible at all times because it serves as the main disconnecting device.**

Warning **To prevent the switch from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 113°F (45°C). To prevent airflow restriction, allow at least 3 inches (7.6 cm) of clearance around the ventilation openings.**

Warning **When installing the unit, the ground connection must always be made first and disconnected last.**

Warning **This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.**

Warning **Do not work on the system or connect or disconnect cables during periods of lightning activity.**

Warning **Ultimate disposal of this product should be handled according to all national laws and regulations.**

Warning **Attach only the Cisco RPS (model PWR300-AC-RPS-N1) to the RPS receptacle.**

Warning **Class 1 laser product**

Warning **Avoid exposure to the laser beam.**

EMC Regulatory Statements

This section includes specific regulatory statements about the Catalyst 3550 family of switches.

U.S.A.

U.S. regulatory information for this product is in the front matter of this manual.

Taiwan

This is a Class A Information product. When used in a residential environment, it may cause radio frequency interference. Under such circumstances, the user may be requested to take appropriate countermeasures.

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Japan

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Korea

Warning **This is a Class A Device and is registered for EMC requirements for industrial use. The seller or buyer should be aware of this. If this type was sold or purchased by mistake, it should be replaced with a residential-use type.**

주의

A급 기기 이 기기는 업무용으로 전자파 적합 등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며 만약 잘못 판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Hungary

This equipment is a Class A product and should be used and installed properly according to the Hungarian EMC Class A requirements (MSZEN55022). Class A equipment is designed for typical commercial establishments for which special conditions of installation and protection distance are used.

Figyelmeztetés a felhasználói kézikönyv számára:
Ez a berendezés “A” osztályú termék, felhasználására és üzembe helyezésére a magyar EMC “A” osztályú követelményeknek (MSZ EN 55022) megfeleloen kerülhet sor, illetve ezen “A” osztályú berendezések csak megfelelo kereskedelmi forrásból származhatnak, amelyek biztosítják a megfelelo speciális üzembe helyezési körülményeket és biztonságos üzemelési távolságok alkalmazását.

Site Requirements

When determining where to place the switch, be sure to observe these requirements:

- For 10/100 and 10/100/1000 ports, cable lengths from the switch to connected devices are up to 100 meters.
- For 100BASE-FX ports, the cable length from a switch to an attached device does not exceed 6562 feet (2 kilometers) for full-duplex connections.
- For 1000BASE-X GBIC ports, cable lengths from the switch to the connected devices are up to 100 kilometers. For specific cable lengths, refer to the GBIC documentation.
- For 1000BASE-T GBIC ports, cable lengths from the switch to the connected devices are up to 100 meters. For specific cable lengths, refer to the GBIC documentation.
- For GigaStack GBIC ports, cable lengths from the switch to the connected devices are up to 1 meter. For specific cable lengths, refer to the GigaStack GBIC documentation.
- Operating environment is within the ranges listed in Appendix A, "Technical Specifications."
- Clearance to front and rear panels is such that
  - Front-panel indicators can be easily read.
  - Access to ports is sufficient for unrestricted cabling.
  - Rear-panel power connector is within reach of an AC power receptacle.
- Airflow around the switch and through the vents is unrestricted.
- Temperature around the unit does not exceed 113°F (45°C).

Note If the switch is installed in a closed or multirack assembly, the temperature around it might be greater than normal room temperature.

- Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures.

Verifying Package Contents

Note Carefully remove the contents from the shipping container, and check each item for damage. If any item is missing or damaged, contact your Cisco representative or reseller for support. Return all packing material to the shipping container, and save it.

The switch is shipped with these items:

- This *Catalyst 3550 Multilayer Switch Hardware Installation Guide*
- *Where to Find the Catalyst 3550 Documentation* flyer
- Cisco Documentation CD-ROM
- AC power cord
- Mounting kit containing:
  - Four rubber feet for mounting the switch on a table
  - Two 19-inch rack-mounting brackets
  - Four Phillips flat-head screws for attaching the brackets to the switch (Catalyst 3550-12T and 3550-12G)
  - Six Phillips flat-head screws for attaching the brackets to the switch (Catalyst 3550-24, 3550-48, 3550-24-FX, and 3550-24-DC)
  - Four Phillips machine screws for attaching the brackets to a rack
  - One cable guide and one black Phillips machine screw for attaching the cable guide to one of the mounting brackets
  - One RPS connector cover (for wall mounting)
  - Two Phillips pan-head screws (for attaching the RPS cover)
  - Four Phillips truss-head screws (for wall-mounting brackets)
- DC-switch kit containing these items:
  - One DC terminal block plug (also called a terminal block header)
  - One ground lug
  - Two number-10-32 screws for attaching the ground lug to the switch

  - Two 23-inch rack-mounting brackets (with 1-inch spacing for telco racks)
  - Four number-8 Phillips truss-head screws for attaching the brackets to the switch
  - Two number-12 Phillips machine screws for attaching the brackets to a rack

Note The DC-switch kit ships only with the Catalyst 3550-24-DC switch.

- One RJ-45-to-DB-9 adapter cable
- Cisco Information Packet, containing warranty, safety, and support information

Installing the Switch

These sections describe the steps required to install the switch in a rack, on a wall or on a table or shelf.

Rack Mounting

Warning **To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:**

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

To install the switch in a 19-inch or 24-inch rack (24-inch racks require optional mounting hardware), follow the instructions described in these procedures:

- Attaching Brackets to the Catalyst 3550-12T and 3550-12G Switches, page 2-9
- Attaching Brackets to the Catalyst 3550-24 and 3550-48, 3550-24-FX, and 3550-24-DC Switches, page 2-13
- Mounting the Switch in a Rack, page 2-16
- Attaching the Cable Guide, page 2-17

Note Installing the switch in a 24-inch rack requires an optional bracket kit not included with the switch. You can order a kit containing the 24-inch rack-mounting brackets and hardware from Cisco. For the Catalyst 3550-12T and 3550-12G switches, order part number RCKMNT-3550-1.5RU=. For the Catalyst 3550-24, 3550-48, 3550-24-FX, and 3550-24-DC switches, order part number RCKMNT-1RU=.

Attaching Brackets to the Catalyst 3550-12T and 3550-12G Switches

The bracket orientation and the brackets you use depend on whether you are attaching the brackets for a 19-inch or a 24-inch rack. For 19-inch racks, use bracket part number 700-11523-01; for 24-inch racks, use bracket part number 700-12398-01. Figure 2-1 through Figure 2-6 show how to attach each type bracket to one side of the switch. Follow the same steps to attach the second bracket to the opposite side.

Figure 2-1 Attaching Brackets for 19- and 24-Inch Racks, Front Panel Forward

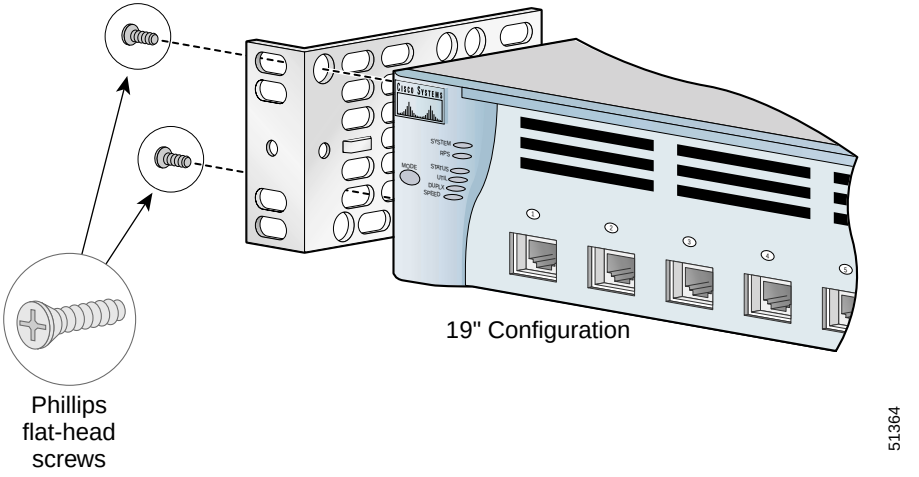


Figure 2-2 Attaching Brackets for 19- and 24-Inch Racks, Front Panel Forward

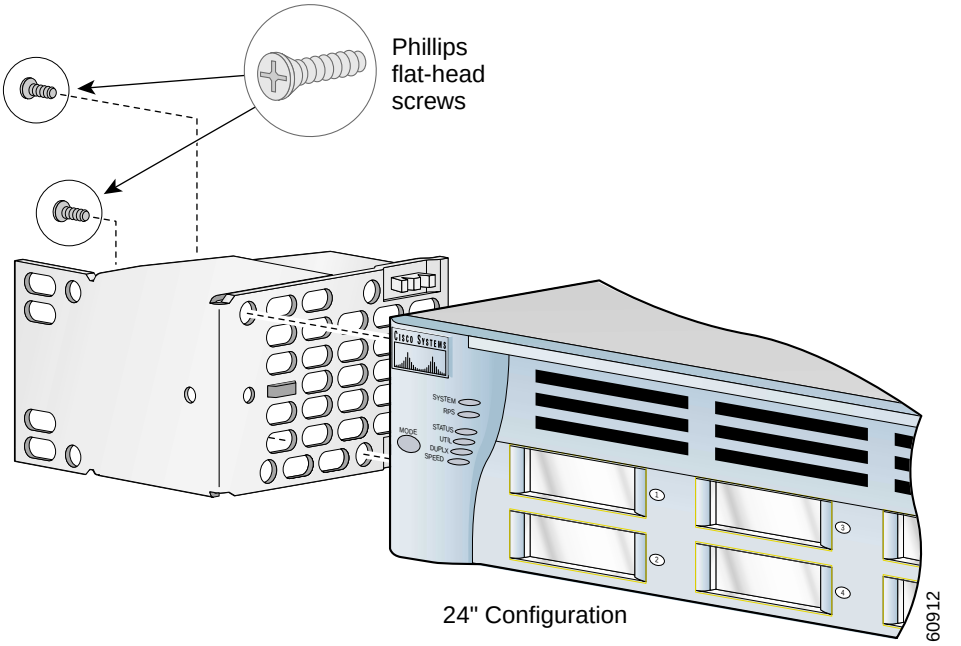


Figure 2-3 Attaching Brackets for 19- and 24-Inch Racks, Rear Panel Forward

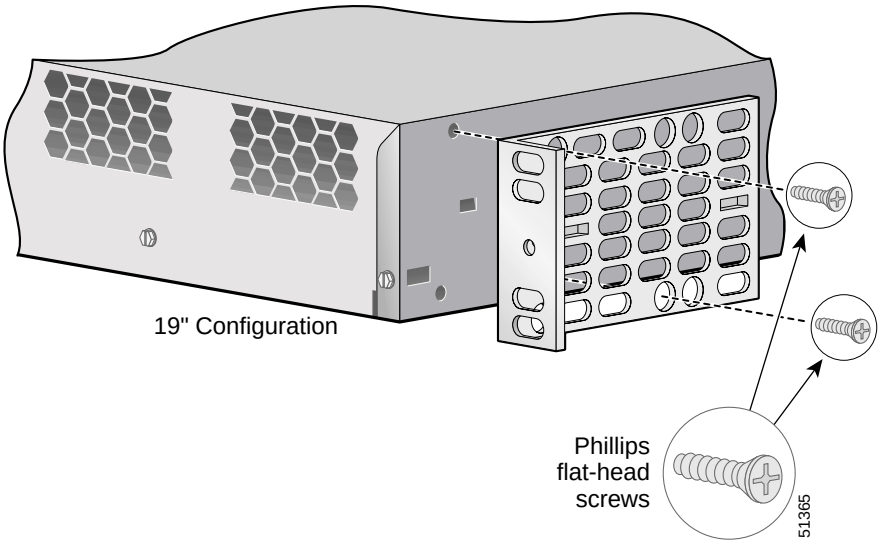


Figure 2-4 Attaching Brackets for 19- and 24-Inch Racks, Rear Panel Forward

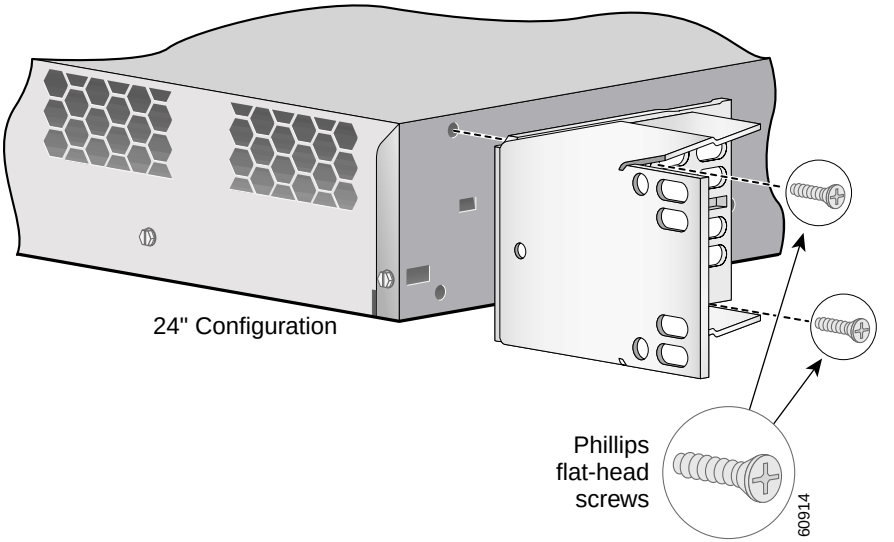


Figure 2-5 Attaching Brackets for 19- and 24-Inch Telco Racks

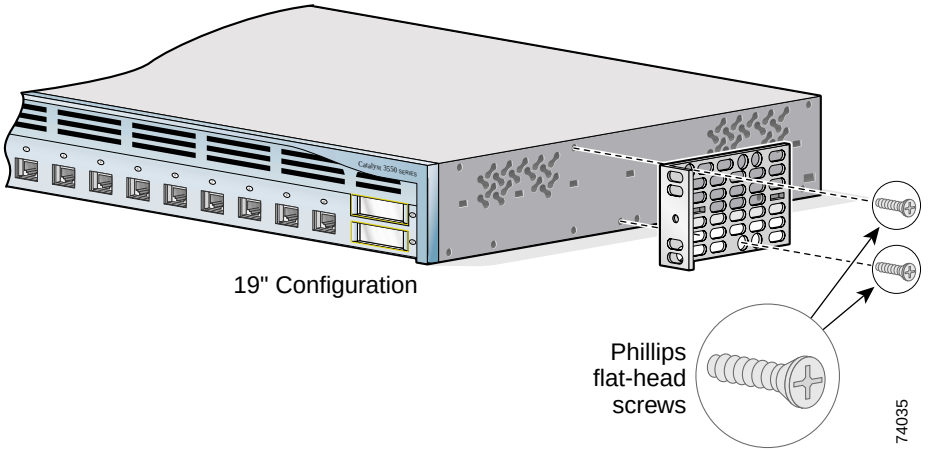
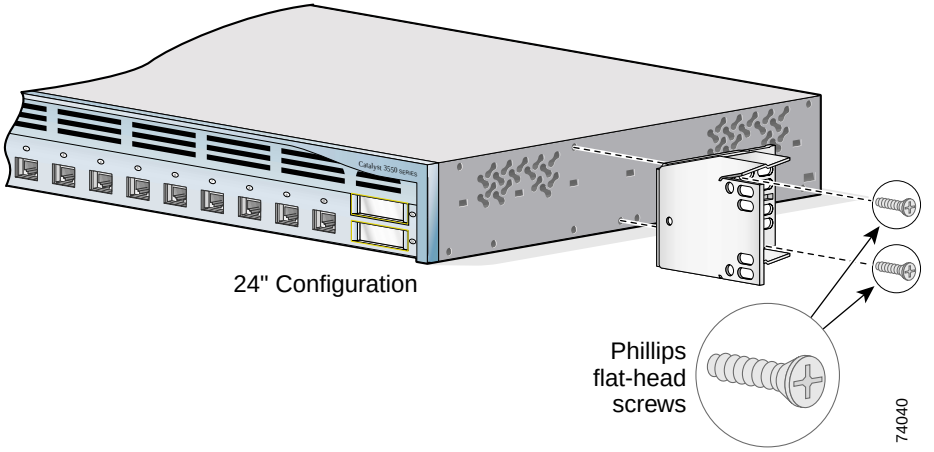


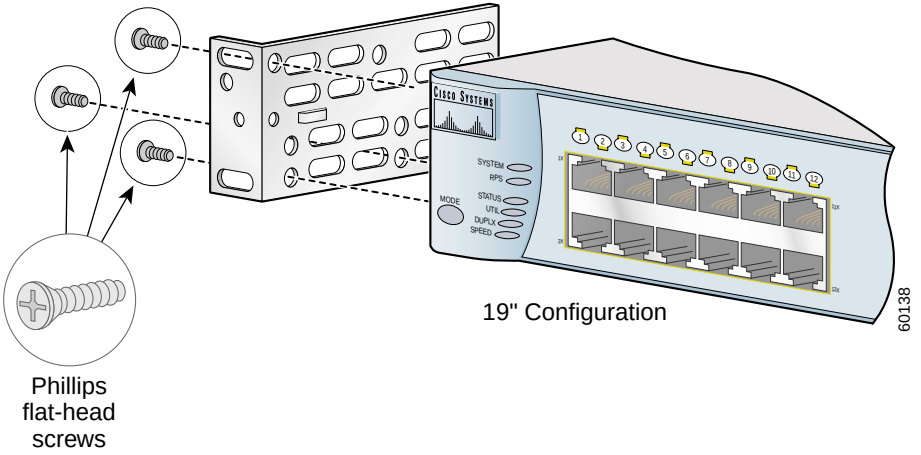
Figure 2-6 Attaching Brackets for 19- and 24-Inch Telco Racks



Attaching Brackets to the Catalyst 3550-24 and 3550-48, 3550-24-FX, and 3550-24-DC Switches

The bracket orientation and the brackets you use depend on whether you are attaching the brackets for a 19-inch or a 24-inch rack. For 19-inch racks, use bracket part number 700-8209-01; for 24-inch racks, use bracket part number 700-13248-01. Figure 2-7 through Figure 2-12 show how to attach each type bracket to one side of the switch. Follow the same steps to attach the second bracket to the opposite side.

Figure 2-7 Attaching Brackets for 19- and 24-Inch Racks, Front Panel Forward



Note Before you attach the brackets on the Catalyst 3550-24-FX switch, remove the screws that are on the bottom-front of the chassis. Attach the bracket by using the supplied Phillips flat-head screws, as shown in Figure 2-7.

Figure 2-8 Attaching Brackets for 19- and 24-Inch Racks, Front Panel Forward

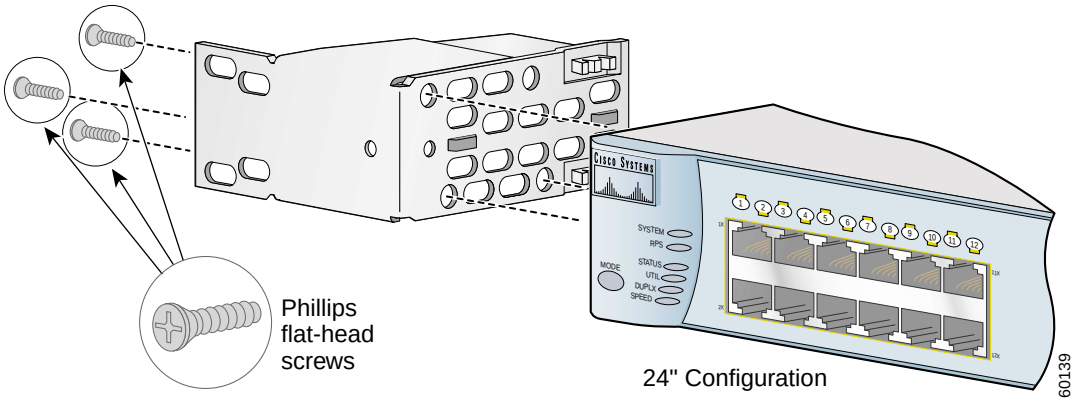


Figure 2-9 Attaching Brackets for 19- and 24-Inch Racks, Rear Panel Forward

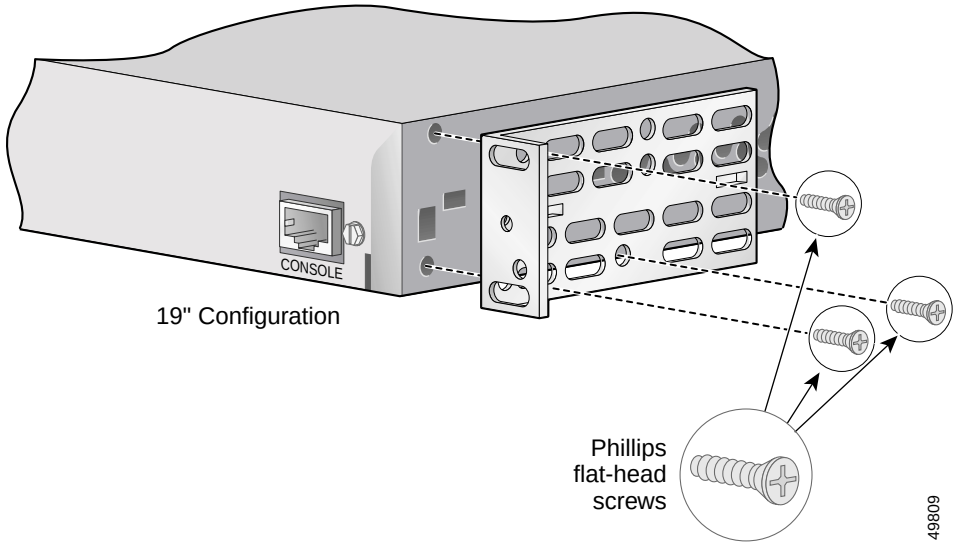


Figure 2-10 Attaching Brackets for 19- and 24-Inch Racks, Rear Panel Forward

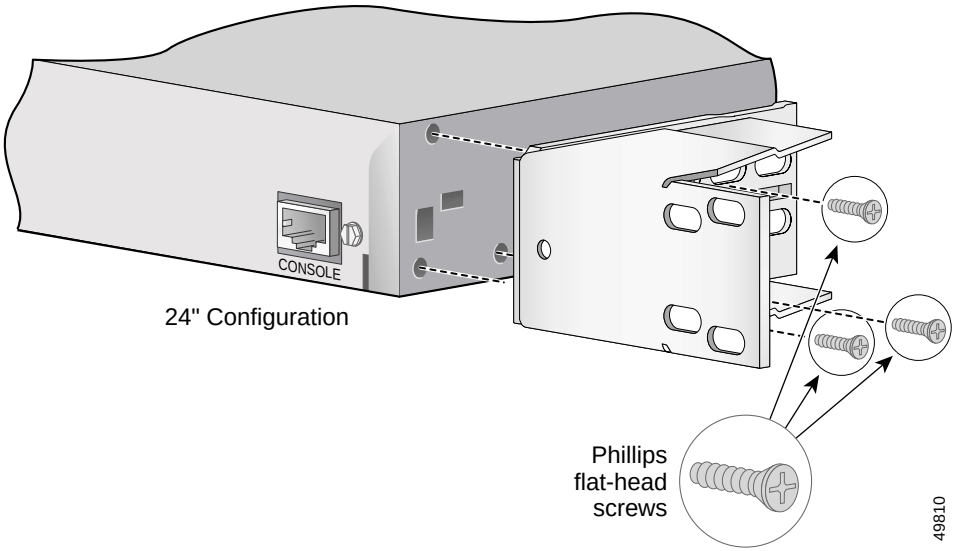
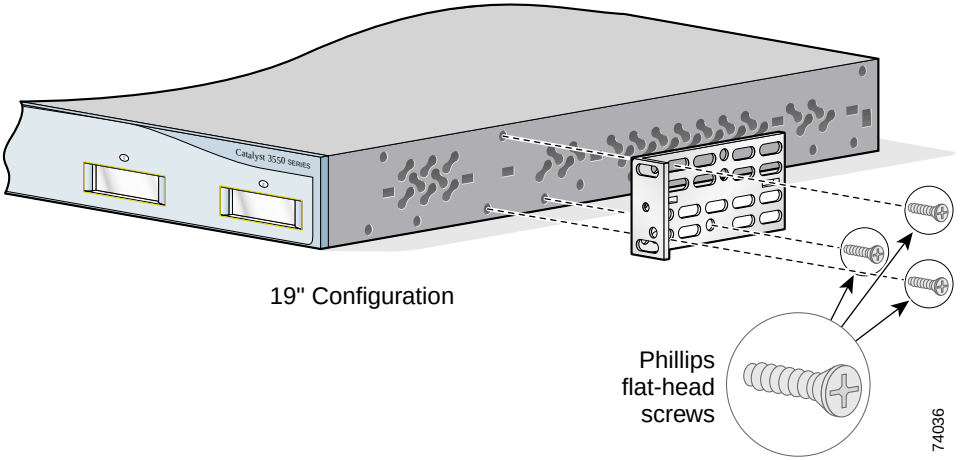
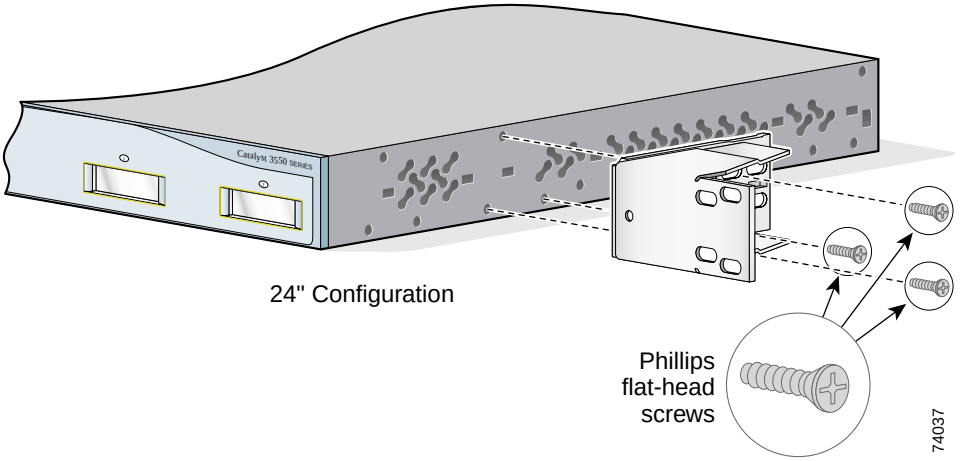


Figure 2-11 Attaching Brackets for 19- and 24-Inch Telco Racks



Note Before you attach the brackets on the Catalyst 3550-24-FX switch, remove the screws that are in the middle of the chassis. Attach the bracket by using the supplied Phillips flat-head screws, as shown in Figure 2-11.

Figure 2-12 Attaching Brackets for 19- and 24-Inch Telco Racks



Mounting the Switch in a Rack

After the brackets are attached to the switch, use the four supplied number-12 Phillips machine screws to securely attach the brackets to the rack, as shown in Figure 2-13 and Figure 2-14.

Figure 2-13 Mounting the Catalyst 3550-12T and 3550-12G Switches in a Rack

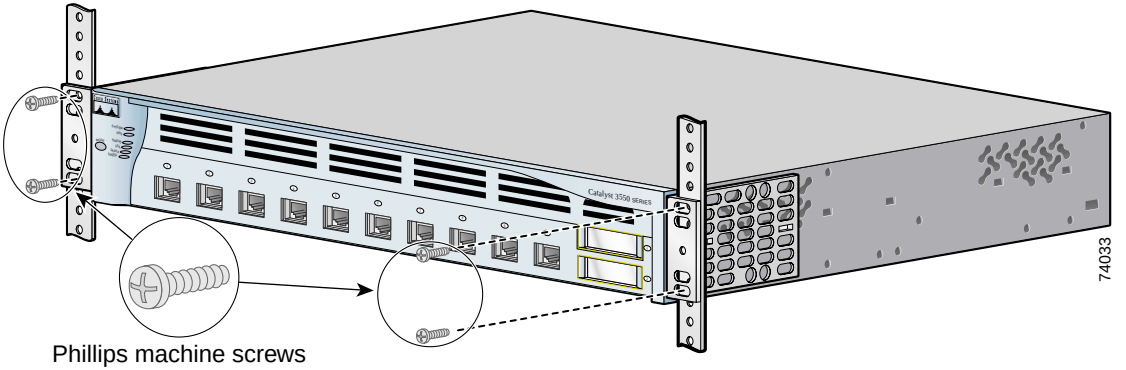
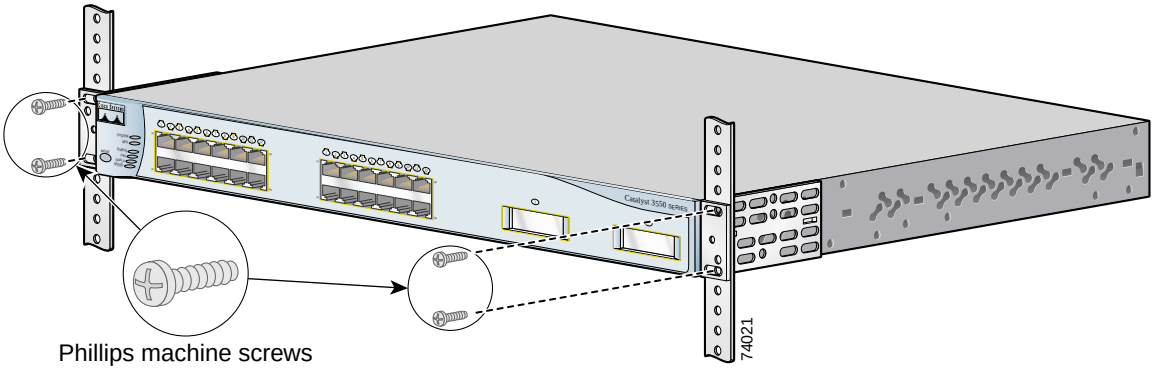


Figure 2-14 Mounting the Catalyst 3550-24, 3550-48, 3550-24-FX, and 3550-24-DC Switches in a Rack



After the switch is mounted in the rack, see the "Attaching the Cable Guide" section on page 2-17 and the "Powering On the Switch" section on page 2-24 to complete the installation.

Attaching the Cable Guide

We recommend attaching the cable guide to prevent the cables from obscuring the front panel of the switch and the other devices installed in the rack. Use the supplied black screw, as shown in Figure 2-15 and Figure 2-16 to attach the cable guide to the left or right bracket.

Note The Catalyst 3550-48 switch ships with a special cable guide, as shown in Figure 2-16. This cable guide secures up to 48 cables. Use the supplied black screw to mount it on the left bracket.

Figure 2-15 Attaching the Cable Guide on the Catalyst 3550-12T, 3550-12G, 3550-24, 3550-24-FX, and 3550-24-DC Switches

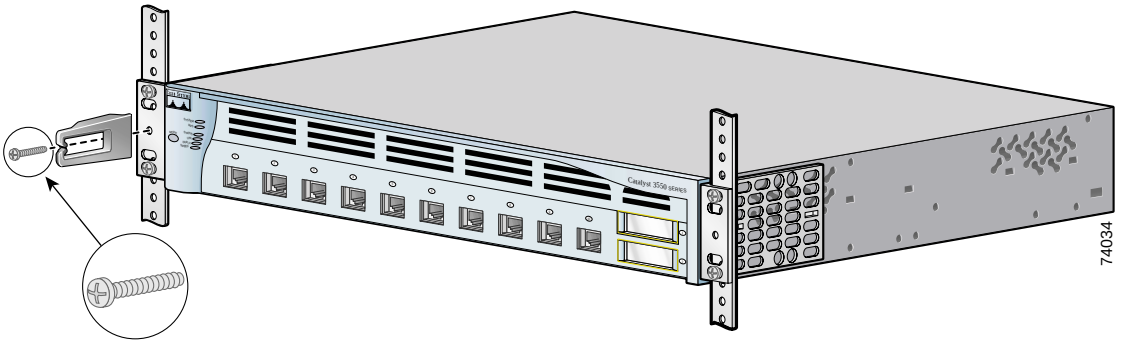
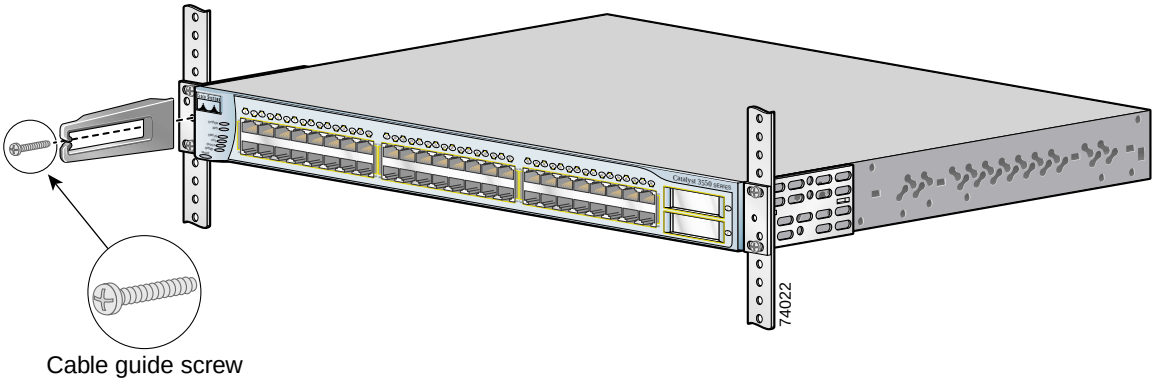


Figure 2-16 Attaching the Cable Guide on the Catalyst 3550-48 Switch



Wall Mounting

To install the switch on a wall, follow the instructions in these procedures:

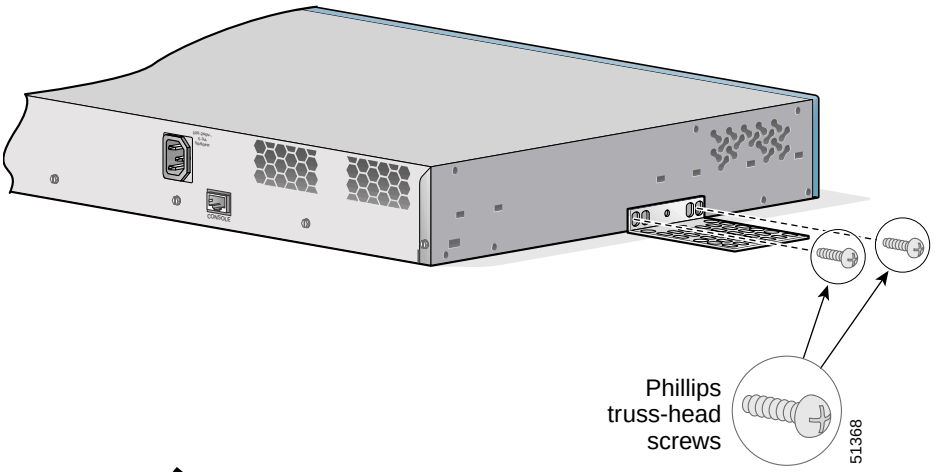
- Attaching the Brackets to the Switch for Wall-Mounting, page 2-19
- Attaching the RPS Connector Cover, page 2-20
- Mounting the Switch on a Wall, page 2-21

Note The illustrations in this section show the Catalyst 3550-12T switch as an example. All the Catalyst 3550 switches are wall-mounted following the same procedures.

Attaching the Brackets to the Switch for Wall-Mounting

Figure 2-17 shows how to attach a 19-inch bracket to one side of the switch. Follow the same steps to attach the second bracket to the opposite side.

Figure 2-17 Attaching the 19-inch Brackets for Wall-Mounting



Note Before you attach the brackets on the Catalyst 3550-24-FX switch, remove the screws that are in the middle of the chassis. Attach the bracket by using the supplied Phillips flat-head screws, as shown in Figure 2-17.

Attaching the RPS Connector Cover

If you are not using an RPS with your switch, use the two Phillips pan-head screws to attach the RPS connector cover to the back of the switch, as shown in Figure 2-18 and Figure 2-19.

Warning **If an RPS is not connected to the switch, install an RPS connector cover on the back of the switch.**

Figure 2-18 Attaching the RPS Connector Cover on the Catalyst 3550-12T and 3550-12G Switches

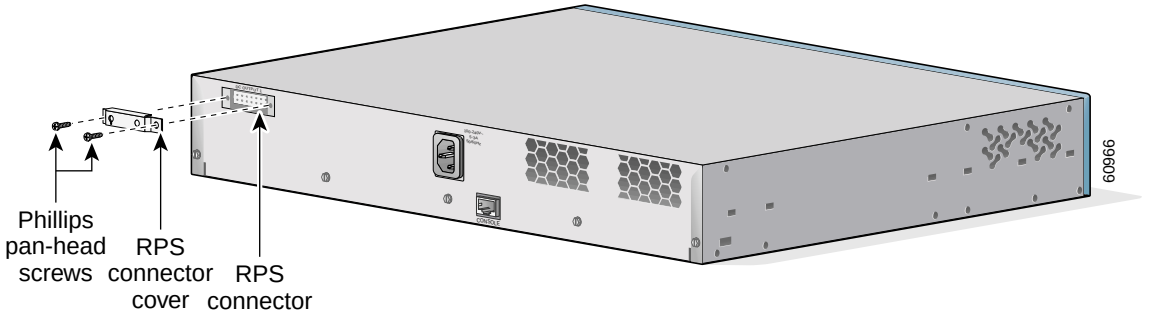
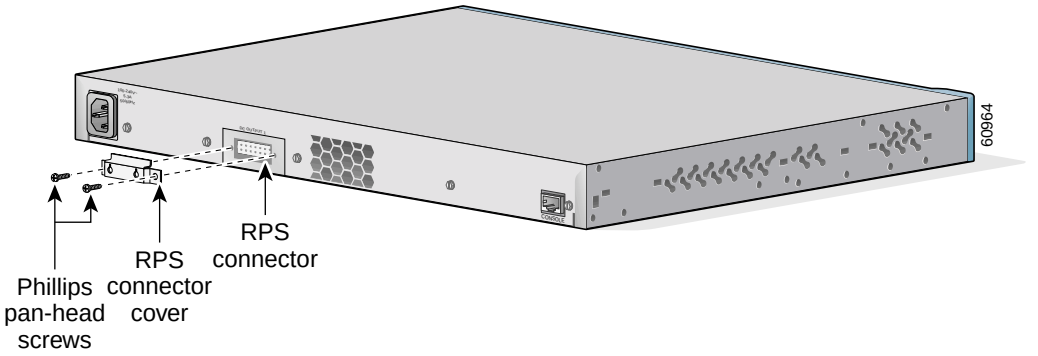


Figure 2-19 Attaching the RPS Connector Cover on the Catalyst 3550-24, 3550-48, or 3550-24-FX Switches



Mounting the Switch on a Wall

For the best support of the switch and cables, make sure the switch is attached securely to wall studs or to a firmly attached plywood mounting backboard. Mount the switch with the front panel facing up, as shown in Figure 2-20.

Warning **To comply with safety regulations, mount the switches on a wall with the front panel facing up.**

Figure 2-20 Mounting the Switch on a Wall

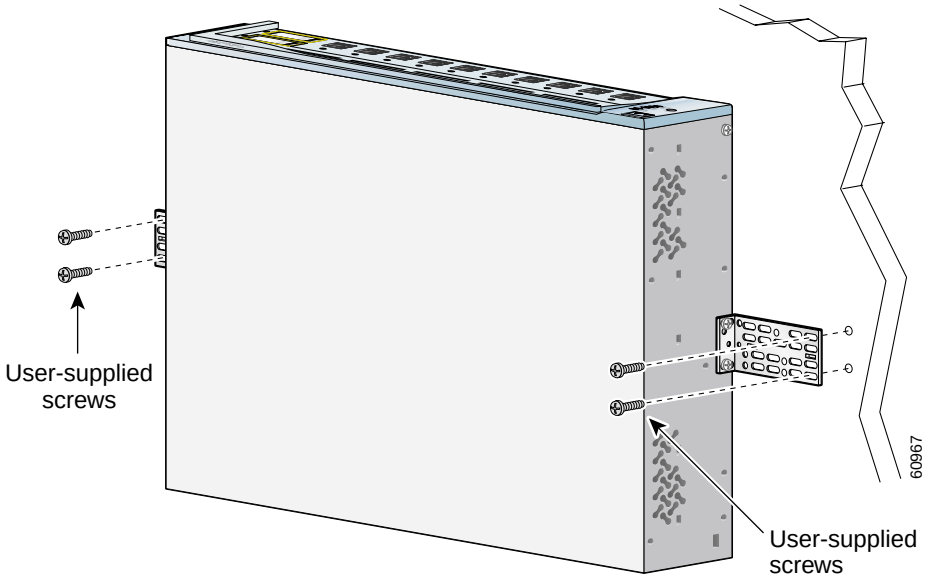


Table or Shelf Mounting

Follow these steps to install the switch on a table or shelf:

Step 1 Locate the adhesive strip with the rubber feet in the mounting-kit envelope. Attach the four rubber feet to the recessed areas on the bottom of the unit.

Step 2 Place the switch on the table or shelf near an AC power source.

After the switch is mounted on the table or shelf, see the "Powering On the Switch" section on page 2-24 to complete the installation.

After the switch is mounted on the table or shelf, see the "Powering On the Switch" section on page 2-24 to complete the installation.

Installing the GBIC Modules

Figure 2-21, Figure 2-22, and Figure 2-23 show how a GBIC module is inserted into a GBIC module slot on the switch. For detailed instructions on installing, removing, and cabling the GBICs (1000BASE-X module, 1000BASE-T module, or the GigaStack module), refer to your GBIC documentation.

Caution To prevent electrostatic-discharge (ESD) damage when installing GBICs, follow your normal board and component handling procedures.

Figure 2-21 Installing a 1000BASE-X GBIC Module in a Switch

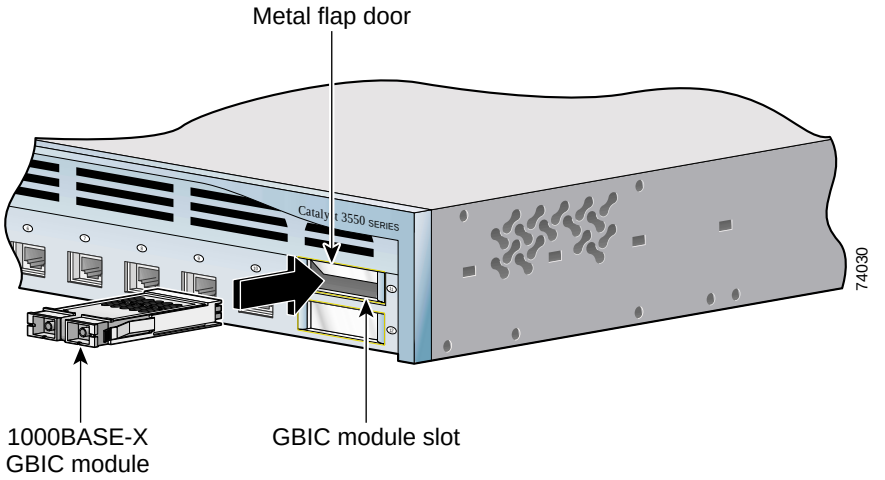


Figure 2-22 Installing a 1000BASE-T GBIC Module in a Switch

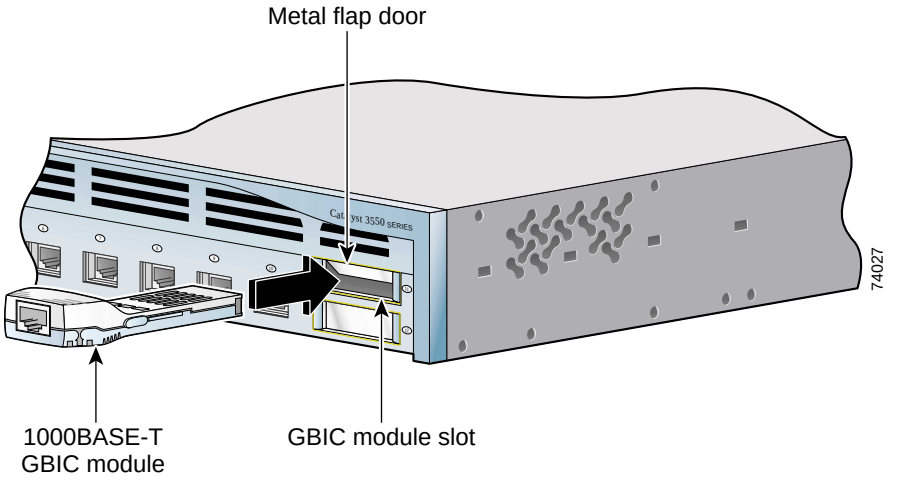
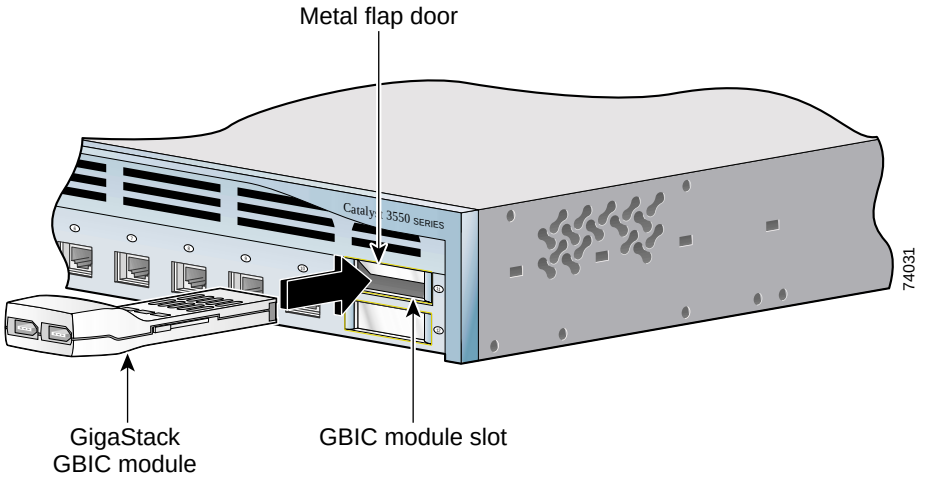


Figure 2-23 Installing a GigaStack GBIC Module in a Switch



Powering On the Switch

If your configuration has an RPS, connect the switch and the RPS to the same AC power source. See the "Power Connectors" section on page 1-23, and refer to the Cisco RPS documentation for more information.

Note Always put the RPS in standby mode when you are connecting devices to it and in active mode during normal operation.

To power on the switch, follow these steps:

Step 1 Make sure that you have started the terminal emulation software program (such as ProComm, HyperTerminal, tip, or minicom) from your management station. See the "Connecting a PC or Terminal to the Console Port" section on page 2-40 for information on connecting to the switch console port.

Step 2 Connect one end of the AC power cord to the AC power connector on the switch.

Step 3 Connect the other end of the power cord to an AC power outlet.

Warning **Attach only the Cisco RPS 300 (model PWR300-AC-RPS-N1) to the RPS receptacle**

For POST information, see the "Running Post" section on page 2-34.

Connecting to DC Power

To connect the Catalyst 3550-24-DC switch to a DC-input power source, follow the steps in these sections:

- Preparing for Installation
- Grounding the Switch
- Wiring the DC-Input Power Source

Warning **The Catalyst 3550-24-DC contains no field-replaceable units (FRUs). Do not open the chassis or attempt to remove or replace any components. For information about obtaining service for this unit, contact your reseller or Cisco sales representative.**

Warning **The equipment is to be installed in a restricted access area.**

Warning **Ethernet cables must be shielded when used in a central office environment.**

Preparing for Installation

Locate the ground lug and the two number-10-32 screws on the switch rear panel and the DC terminal block plug in the DC-switch accessory kit.

Obtain these necessary tools and equipment:

- Ratcheting torque screwdriver with a Phillips head that exerts up to 15 pound-force inches (lbf-in.) or 240 ounce-force inches (ozf-in.) of pressure

- Panduit crimping tool with optional controlled cycle mechanism (model CT-700, CT-720, CT-920, CT-920CH, CT-930, or CT-940CH)
- 6-gauge copper ground wire (insulated or noninsulated)
- Four leads of 18-gauge copper wire
- Wire-stripping tools for stripping 6- and 18-gauge wires

Grounding the Switch

Warning **This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.**

Caution To make sure that the equipment is reliably connected to earth ground, follow the grounding procedure instructions, and use a UL-listed lug suitable for number-6 AWG wire and two number-10-32 ground-lug screws.

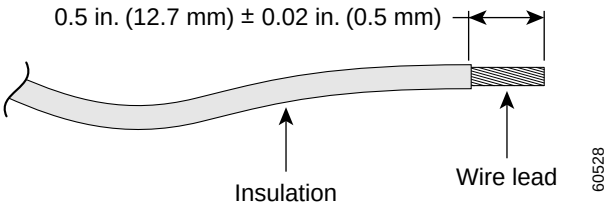
Warning **When installing the unit, always make the ground connection first and disconnect it last.**

To ground the switch to earth ground, follow these steps. Make sure to follow any grounding requirements at your site.

Step 1 Locate and remove the ground lug and the two number-10-32 ground-lug screws from the rear panel of the switch. (See Figure 2-26 for location.) Use a standard Phillips screwdriver or a ratcheting torque screwdriver with a Phillips head. Set the screws and the ground lug aside.

Step 2 If your ground wire is insulated, use a wire stripping tool to strip the 6-gauge ground wire to 0.5 inch (12.7 mm) ± 0.02 inch (0.5 mm), as shown in Figure 2-24.

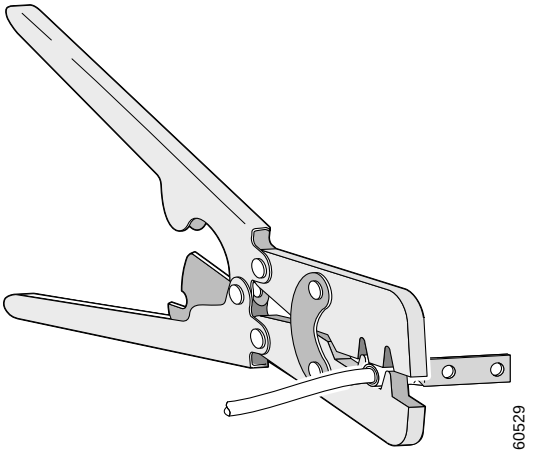
Figure 2-24 Stripping the Ground Wire



Step 3 Slide the open end of the ground lug over the exposed area of the 6-gauge wire.

Step 4 Using a Panduit crimping tool, crimp the ground lug to the 6-gauge wire, as shown in Figure 2-25.

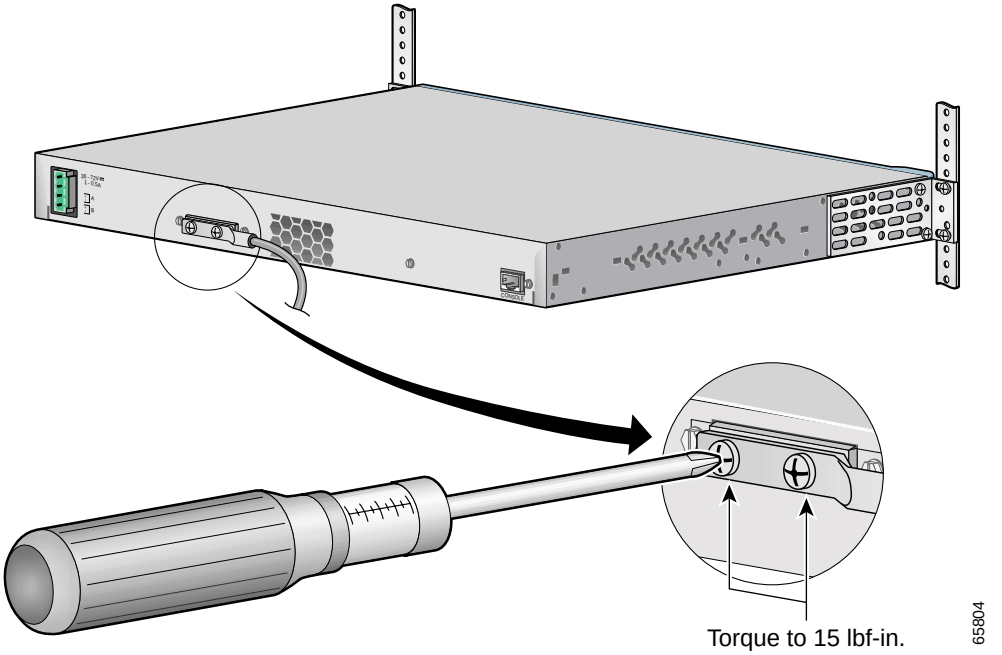
Figure 2-25 Crimping the Ground Lug



Step 5 Use the two number-10-32 screws to attach the ground lug and wire assembly to the switch rear panel RPS connector, as shown in Figure 2-26.

Step 6 Using a ratcheting torque screwdriver, torque each ground-lug screw to 15 lbf-in. (240 ozf-in.)

Figure 2-26 Torquing Ground-Lug Screws



Wiring the DC-Input Power Source

Warning **Only trained and qualified personnel should be allowed to install or replace this equipment.**

Warning **Before performing any of the following procedures, ensure that power is removed from the DC circuit. To ensure that all power is OFF, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position.**

Caution You must connect the Catalyst 3550-24-DC switch only to a DC-input power source that has an input supply voltage from –36 to –72 VDC. If the supply voltage is not in this range, the switch might not operate properly or might be damaged.

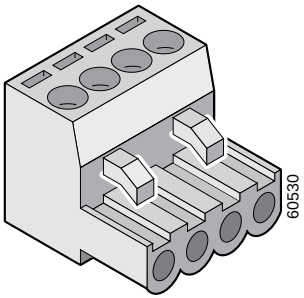
Caution The switch must be installed with 5A-branch-circuit protection.

Note This installation must comply with all applicable codes.

To wire the switch to a DC-input power source, follow these steps:

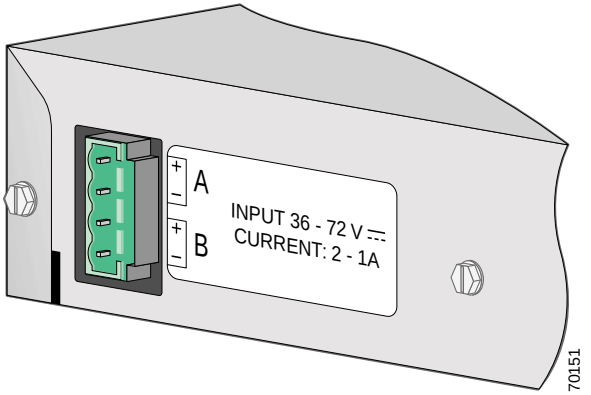
Step 1 Locate and remove the terminal block plug (see Figure 2-27).

Figure 2-27 Terminal Block Plug



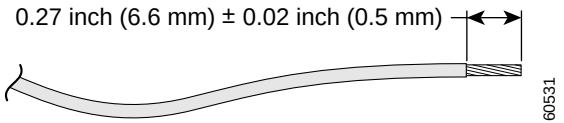
Step 2 Identify the positive and negative feed positions for the terminal block connection. The wiring sequence is positive to positive and negative to negative for both the A and the B feed wires. The switch rear panel identifies the positive and negative positions for both the A and B feed wires, as shown in Figure 2-28.

Figure 2-28 Positive and Negative Positions on the Switch Rear Panel



Step 3 Using a 18-gauge wire-stripping tool, strip each of the four wires coming from the DC-input power source to 0.27 inch (6.6 mm) ± 0.02 inch (0.5 mm), as shown in Figure 2-29. Do not strip more than 0.29 inch (7.4 mm) of insulation from the wire. Stripping more than the recommended amount of wire can leave exposed wire from the terminal block plug after installation.

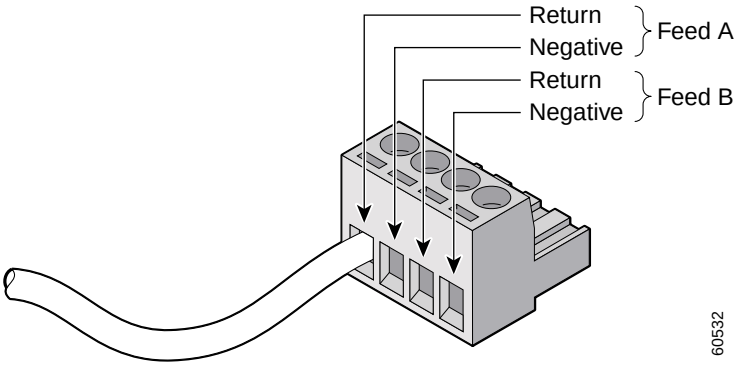
Figure 2-29 Stripping the DC-Input Power Source Wire



Step 4 Insert the exposed wire of one of the four DC-input power source wires into the terminal block plug, as shown in Figure 2-30. Make sure that you cannot see any wire lead. Only wire *with insulation* should extend from the terminal block.

Warning **An exposed wire lead from a DC-input power source can conduct harmful levels of electricity. Be sure that no exposed portion of the DC-input power source wire extends from the terminal block plug.**

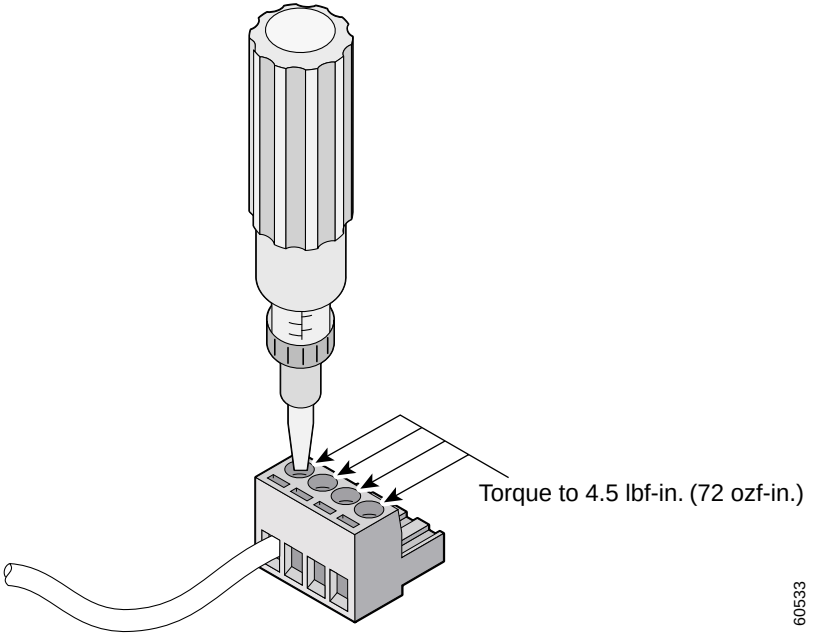
Figure 2-30 Inserting Wires in the Terminal Block Plug



Step 5 Use a ratcheting torque screwdriver to torque the terminal block captive screw (above the installed wire lead) to 4.5 lbf-in. (72 ozf-in.), as shown in Figure 2-31.

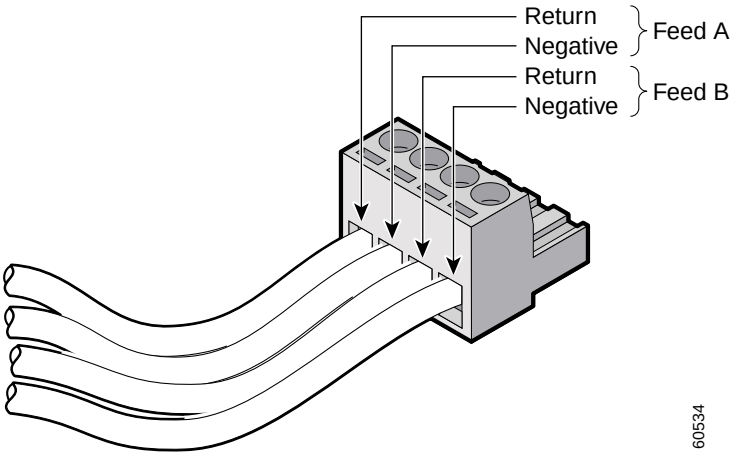
Caution Do not overtorque the terminal-block captive screws. The recommended maximum torque is 4.5 lbf-in. (72 ozf-in.)

Figure 2-31 Torquing the Terminal-Block Captive Screws



Step 6 Repeat Steps 4 and 5 for the remaining three DC-input power source wires. Figure 2-32 shows the completed wiring of a terminal block plug.

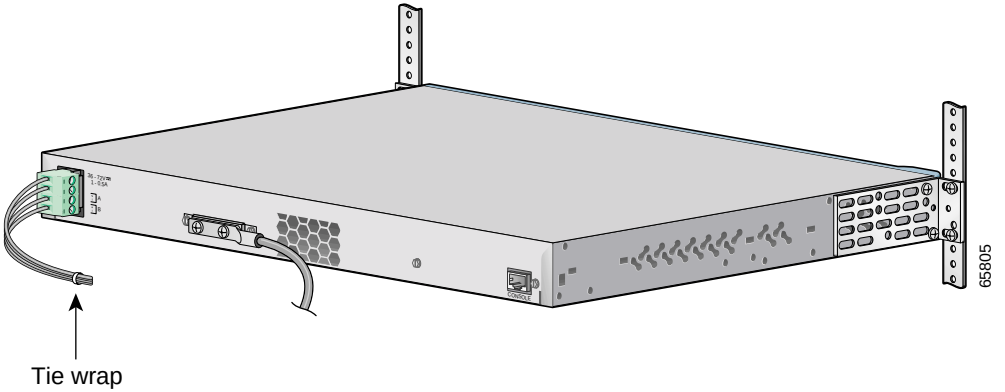
Figure 2-32 Completed Wiring of Terminal Block Plug



Step 7 Insert the terminal block plug in the terminal block header on the switch rear panel, as shown in Figure 2-33.

Caution Secure the wires coming in from the terminal block so that they cannot be disturbed by casual contact. For example, use tie wraps to secure the wires to the rack.

Figure 2-33 Inserting the Terminal Block in the Block Header



Step 8 Remove the tape from the circuit-breaker switch handle, and move the circuit-breaker handle to the on position.

Caution To comply with the intrabuilding lightning surge requirements, intrabuilding wiring must be shielded, and the shield for the wiring must be grounded at both ends.

Caution The Catalyst 3550-24-DC switch is suitable only for intrabuilding or nonexposed wiring connections.

Running Post

As the switch powers on, it begins POST, a series of eight tests that run automatically to ensure that the switch functions properly. When the switch begins POST, the port LEDs turn green. The System LED flashes green, and the RPS LED turns off. As each test runs, the port LEDs, starting with number 1, turn off. The remaining port LEDs each turn off in sequence as the system completes a test.

When POST completes successfully, the port LEDs return to the status mode display, showing that the switch is operational. If a test fails, the port LED associated with the test turns amber, and the system LED turns amber. If POST fails, see Chapter 3, “Troubleshooting,” to determine a course of action.

Connecting to the 10/100 and 10/100/1000 Ports

The switch 10/100 and 10/100/1000 ports configure themselves to operate at the speed of attached devices. If the attached ports do not support autonegotiation, you can explicitly set the speed and duplex parameters. Connecting devices that do not autonegotiate or that have their speed and duplex parameters manually set can reduce performance or result in no linkage.

To maximize performance, choose one of these methods for configuring the Ethernet ports:

- Let the ports autonegotiate both speed and duplex.
- Set the port speed and duplex parameters on both ends of the connection.

Follow these steps to connect to 10BASE-T, 100BASE-TX or 1000BASE-T devices:

Caution To prevent electrostatic-discharge (ESD) damage, follow your normal board and component handling procedures.

Step 1 When connecting to workstations, servers, routers, and Cisco IP Phones, connect a straight-through cable to an RJ-45 connector on the front panel. (See Figure 2-34.) When connecting to switches or repeaters, use a crossover cable. (See the "Cable and Adapter Specifications" section on page B-7 for cable-pinout descriptions.)

Note When connecting to 1000BASE-T-compatible devices, be sure to use a twisted four-pair, Category 5 cable.

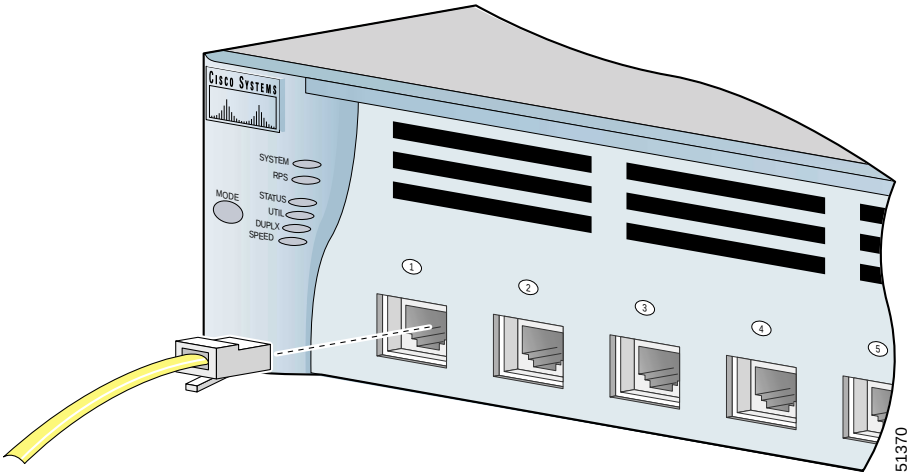
Step 2 Connect the other end of the cable to an RJ-45 connector on the other device. The port LED turns on when both the switch and the connected device have established link.

The port LED is amber while Spanning Tree Protocol (STP) discovers the topology and searches for loops. This takes about 30 seconds, and then the port LED turns green. If the port LED does not turn on, the device at the other end might not be turned on, or there might be a cable problem or a problem with the adapter installed in the attached device. See Chapter 3, "Troubleshooting," for solutions to cabling problems.

Step 3 Reconfigure and reboot the connected device if necessary.

Step 4 Repeat Steps 1 through 3 to connect each device.

Figure 2-34 Connecting to an Ethernet Port



Connecting to 100BASE-FX Ports

The 100BASE-FX ports only operate at 100 Mbps and full-duplex mode.

You can connect a 100BASE-FX port to an SC or ST port on a compatible device by using one of the MT-RJ fiber-optic patch cables listed in Table 2-1. Use the Cisco part numbers in Table 2-1 to order the patch cables that you need.

Table 2-1 MT-RJ Patch Cables for 100BASE-FX Connections

Type	Cisco Part Number
1-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-1M
3-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-3M
5-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-5M
1-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-1M
3-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-3M
5-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-5M

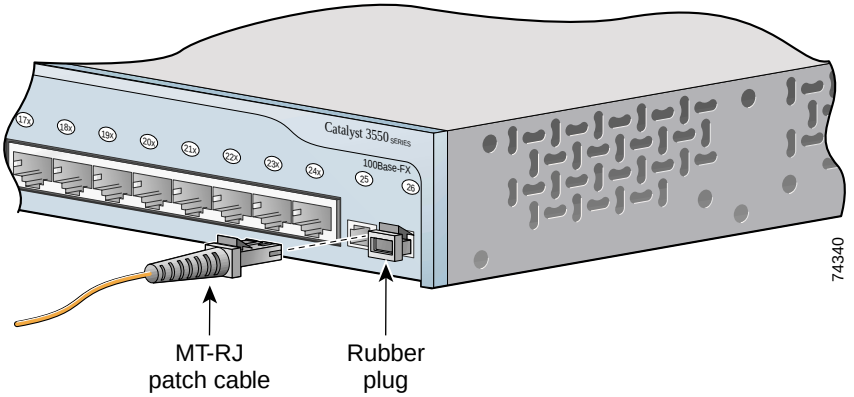
Follow these steps to connect the switch to a 100BASE-FX device:

Caution Do not remove the rubber plugs from the fiber-optic ports or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the fiber-optic ports and cables from contamination and ambient light.

Step 1 Remove the rubber plugs from the 100BASE-FX ports and the rubber caps from the MT-RJ patch cable. Store them for future use.

Step 2 Insert the cable in a 100BASE-FX port. (See Figure 2-35.)

Figure 2-35 Connecting to a 100BASE-FX port



Step 3 Insert the other cable end in an SC or ST port on the target device.

Step 4 Observe the port status LED.

The LED turns green when the switch and the target device have an established link.

The LED turns amber while STP discovers the network topology and searches for loops. This process takes about 30 seconds, and then the port LED turns green.

If the LED is off, the target device might not be turned on, there might be a cable problem, or there might be a problem with the adapter installed in the target device. See Chapter 3, "Troubleshooting", for solutions to cabling problems.

Step 5 Reconfigure and reboot the target device if necessary.

Step 6 Repeat Steps 1 through 5 to connect each port.

Connecting to the GBIC Module Ports

These sections describe how to connect to a GBIC module port. For detailed instructions on installing, removing, and cabling a GBIC (1000BASE-X module, 1000BASE-T module, or the GigaStack module), refer to your GBIC documentation.

Connecting to a 1000BASE-X GBIC Module Port

Caution Do not remove the rubber plugs from the fiber-optic port or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the fiber-optic port and cable from contamination and ambient light.

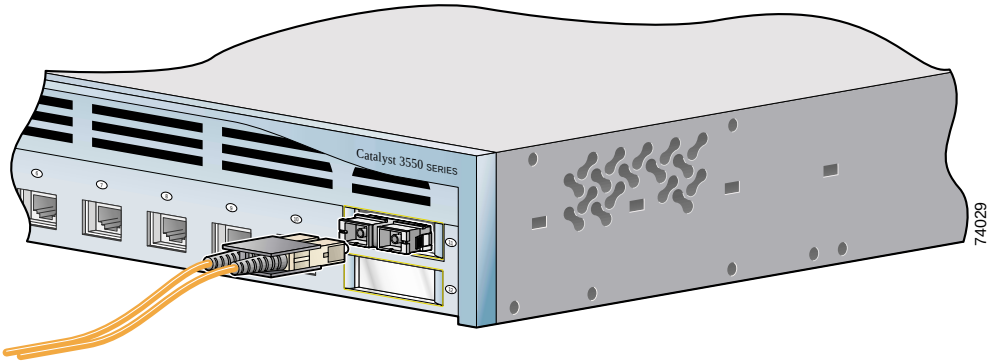
Avoid exposure to the laser beam.

Follow these steps to connect to the 1000BASE-X GBIC port:

Step 1 Remove the rubber plugs from the fiber-optic port on the module, and store them for future use.

Step 2 Insert the SC connector in the fiber-optic receptacle, as shown in Figure 2-36.

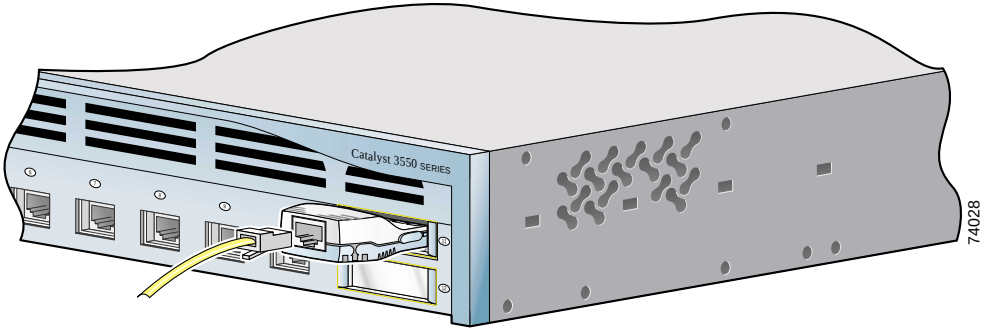
Figure 2-36 Connecting to a 1000BASE-X Module Port



Connecting to a 1000BASE-T GBIC Module Port

Connect the 1000BASE-T connector to the GBIC module port, as shown in Figure 2-37.

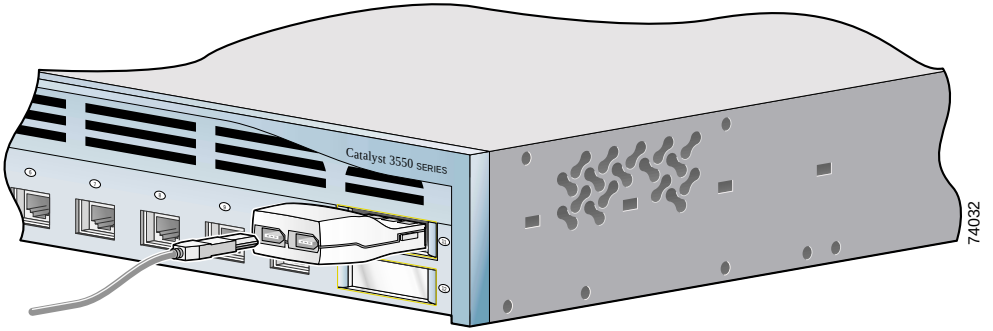
Figure 2-37 Connecting to a 1000BASE-T Module Port



Connecting to a GigaStack GBIC Module Port

Connect the GigaStack cable connector to the GigaStack GBIC module port, as shown in Figure 2-38.

Figure 2-38 Connecting to a GigaStack Module Port



Connecting a PC or Terminal to the Console Port

If you want to connect a PC to the console port, use the supplied RJ-45-to-DB-9 adapter cable. If you want to connect the switch console port to a terminal, you need to provide a RJ-45-to-DB-25 female DTE adapter. You can order a kit (part number ACS-DSBUASYN=) containing that adapter from Cisco. For console port and adapter pinout information, see the "Cable and Adapter Specifications" section on page B-7.

The PC or terminal must support VT100 terminal emulation. The terminal-emulation software—frequently a PC application such as Hyperterminal or Procomm Plus—makes communication between the switch and your PC or terminal possible during the setup program.

Follow these steps to connect the PC or terminal to the switch:

Step 1 Configure the baud rate and character format of the PC or terminal to match these console port default characteristics:

- 9600 baud
- 8 data bits
- 1 stop bit
- No parity

After you have gained access to the switch, you can change the console baud rate through the **Administration > Console Baud Rate** menu in the Cluster Management Suite (CMS).

Step 2 Using the supplied RJ-45-to-DB-9 adapter cable, insert the RJ-45 connector into the console port, as shown in Figure 2-39 and Figure 2-40.

Step 3 Attach the DB-9 female DTE adapter of the RJ-45-to-DB-9 adapter cable to a PC, or attach an appropriate adapter to the terminal.

Step 4 Start the terminal-emulation program if you are using a PC or terminal.

Figure 2-39 Connecting to the Catalyst 3550-12T and 3550-12G Console Port

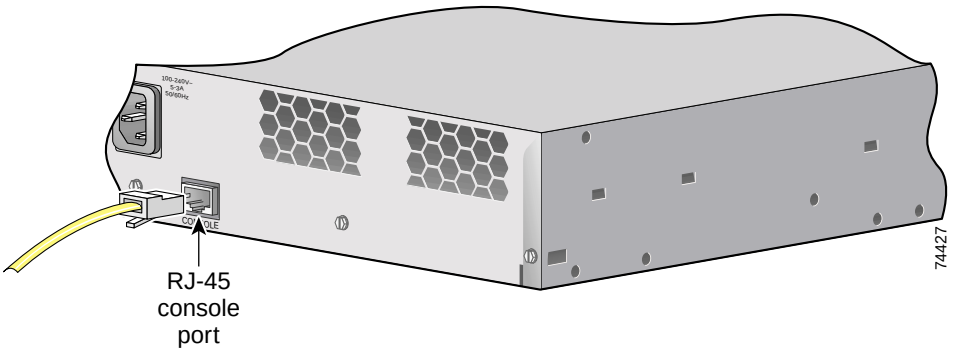
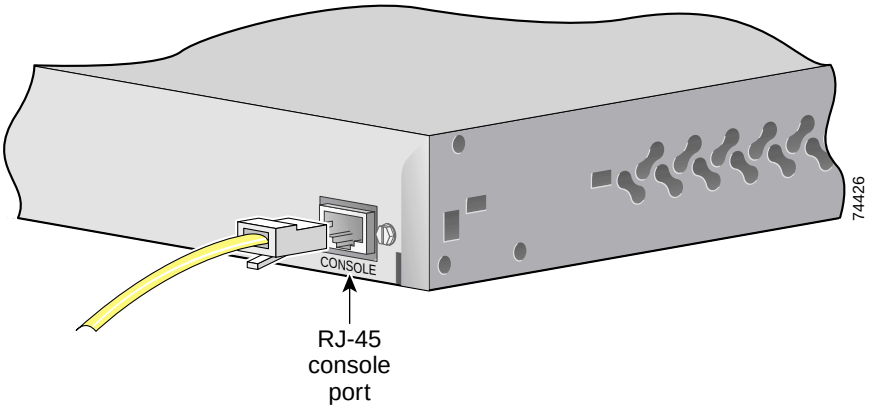


Figure 2-40 Connecting to the Catalyst 3550-24, 3550-48, 3550-24-FX, and 3550-24-DC Console Port



Where to Go Next

If the default configuration is satisfactory, the switch does not need further configuration. You can use any of these management options to change the default configuration:

- Start the Cluster Management Suite, as described in the *Catalyst 3550 Multilayer Switch Software Configuration Guide*, and configure the switch as a member of a cluster or as an individual switch. Refer to the *Release Notes for the Catalyst 3550 Multilayer Switch* on Cisco.com for the most current browser requirements.
- Use the CLI to configure the switch from the console. Refer to the *Catalyst 3550 Multilayer Switch Software Configuration Guide* and the *Catalyst 3550 Multilayer Switch Command Reference* on Cisco.com for information on using the CLI with a Catalyst 3550 switch.
- Start an SNMP application such as the CiscoView application.

CHAPTER 3

Troubleshooting

The LEDs on the front panel provide troubleshooting information about the switch. They show failures in the power-on self-test (POST), port-connectivity problems, and overall switch performance. For a full description of the switch LEDs, see the "LEDs" section on page 1-10.

You can also get statistics from the browser interface, from the command-line interface (CLI), or from a Simple Network Management Protocol (SNMP) workstation. Refer to the *Catalyst 3550 Multilayer Switch Software Configuration Guide*, and the *Catalyst 3550 Multilayer Switch Command Reference* on Cisco.com, or the documentation that came with your SNMP application for details.

This chapter describes these topics for troubleshooting problems:

- Understanding POST Results, page 3-1
- Diagnosing Problems, page 3-2

Understanding POST Results

Table 3-1 lists the eight POST tests and their associated LEDs.

POST tests run automatically each time the switch is powered on. When the switch begins POST, the port LEDs turn green. The System LED flashes green, and the RPS LED turns off. As each test runs, the port LEDs, starting with number 1, turn off. The remaining port LEDs each turn off in sequence as the system completes a test.

When POST completes successfully, the port LEDs return to the status mode display, showing that the switch is operational. If a test fails, the port LED associated with the test turns amber, and the system LED turns amber.

Note POST failures are usually fatal. Call Cisco Systems if your switch does not pass POST.

Table 3-1 POST Test Descriptions

Switch LED	Component Tested
LED 1	DRAM
LED 2	Flash memory
LED 3	CPU interface buffer
LED 4	CPU interface ASIC
LED 5	Switch core ASIC
LED 6	TCAM
LED 7	Ethernet controller ASIC
LED 8	Ethernet interfaces

Diagnosing Problems

Common switch problems fall into these categories:

- Poor performance
- No connectivity
- Corrupted software

Table 3-2 describes how to detect and resolve these problems.

Table 3-2 Common Problems and Their Solutions

Symptom	Possible Cause	Resolution
Poor performance or excessive errors	Duplex autonegotiation mismatch.	Refer to the *Catalyst 3550 Multilayer Switch Software Configuration Guide* for information on identifying autonegotiation mismatches.
	Cabling distance exceeded	
	• Port statistics show excessive frame check sequence (FCS), late-collision, or alignment errors.	• Refer to the *Catalyst 3550 Multilayer Switch Software Configuration Guide* for information on displaying port statistics.
	• For 10/100 and 10/100/1000BASE-T connections:	
	– The distance between the port and the attached device exceeds 100 meters.	• Reduce the cable length to within the recommended distances.
	– If the switch is attached to a repeater, the total distance between the two end stations exceeds the cabling guidelines.	• Refer to your repeater documentation for cabling guidelines.
	• For GBIC port connections:	
	– The distance between the GBIC port and the attached device exceeds the GBIC cabling guidelines.	• Refer to your GBIC documentation for cabling guidelines.
	Bad adapter in attached device	
	• Excessive errors found in port statistics.	• Run adapter card diagnostic utility.
	• STP checking for possible loops.	• Wait 30 seconds for the port LED to turn green.

Table 3-2 Common Problems and Their Solutions (continued)

Symptom	Possible Cause	Resolution
No connectivity	**Incorrect or bad cable** The following are results of no link at both ends: • A crossover cable was used when a straight-through was required, or vice-versa. • The cable is wired incorrectly. • A crossover or straight-through cable is wired incorrectly. • STP checking for possible loops.	• For the correct pinouts and the proper application of crossover vs. straight-through cables, see the "Two Twisted-Pair Cable Pinouts" section on page B-7. • Replace with a tested good cable. • For 1000BASE-T connections, be sure to use a twisted four-pair, Category 5 cable. • Wait 30 seconds for the port LED to turn green.
	Switch not recognizing a GBIC module.	Refer to the your GBIC documentation for more information.
Unreadable characters on the management console	Incorrect baud rate.	Reset the emulation software to 9600 baud.

Table 3-2 Common Problems and Their Solutions (continued)

Symptom	Possible Cause	Resolution
Amber System LED	Nonfatal or fatal POST error detected.	Check the port LEDs as described in Table 3-1 to see which POST test failed.
Switch placed in error-disabled state after GBIC is inserted	Bad or non-Cisco-approved GBIC.	Remove the GBIC module from the switch, and replace it with a Cisco-approved module. Use the **errdisable recovery cause gbic-invalid** global configuration command to verify the port status, and enter a time interval to recover from the error-disable state. Refer to the *Catalyst 3550 Multilayer Switch Command Reference* for information on the **errdisable recovery** command.

Technical Specifications

This appendix lists the technical specifications in Table A-1 and Table A-2 and the regulatory agency approvals in Table A-5.

Table A-1 Technical Specifications for the Catalyst 3550-12T and 3550-12G

Environmental Ranges	
Operating temperature	32 to 113°F (0 to 45°C)
Storage temperature	–13 to 158°F (–25 to 70°C)
Relative humidity	10 to 85% (noncondensing)
Operating altitude	Up to 10,000 ft (3049 m)
Storage altitude	Up to 15,000 ft (4573 m)
Power Requirements	
AC input voltage	100 to 127/200 to 240 VAC (autoranging) 2.0A/1.0A, 50 to 60 Hz
DC input voltages for RPS 300	⎓+12V⎓@13A
Power consumption	190W, 650 Btus per hour
Physical Dimensions	
Weight	16 lb (7.26 kg)
Dimensions (H x D x W)	2.63 x 15.9 x 17.5 in. (6.68 x 40.39 x 44.45 cm)

Table A-2 Technical Specifications for the Catalyst 3550-24, 3550-48, and 3550-24-FX

Environmental Ranges	
Operating temperature	32 to 113°F (0 to 45°C)
Storage temperature	–13 to 158°F (–25 to 70°C)
Relative humidity	10 to 85% (noncondensing)
Operating altitude	Up to 10,000 ft (3049 m)
Storage altitude	Up to 15,000 ft (4573 m)
Power Requirements	
AC input voltage	100 to 127/200 to 240 VAC (autoranging) 1.6A/0.9A, 50 to 60 Hz
DC input voltages for RPS 300	Catalyst 3550-24: ⎓+12V⎓@8.5A Catalyst 3550-48: ⎓+12V⎓@13A Catalyst 3550-24-FX: ⎓+12V⎓@8.5A
Power consumption	Catalyst 3550-24: 65W, 222 Btus per hour Catalyst 3550-48: 110W, 375 Btus per hour Catalyst 3550-24-FX: 85W, 290 Btus per hour
Physical Dimensions	
Weight	Catalyst 3550-24: 11 lb (5 kg) Catalyst 3550-48: 13 lb (5.9 kg) Catalyst 3550-24-FX: 10.5 lb (4.8 kg)
Dimensions (H x D x W)	Catalyst 3550-24: 1.75 x 14.4 x 17.5 in. (4.45 x 36.58 x 44.45 cm) Catalyst 3550-48: 1.75 x 16.25 x 17.5 in. (4.45 x 41.28 x 44.45 cm) Catalyst 3550-24-FX: 1.75 x 16.25 x 17.5 in. (4.45 x 41.28 x 44.45 cm)

Table A-3 Technical Specifications for the Catalyst 3550-24-DC

Environmental Ranges	
Operating temperature	32 to 113°F (0 to 45°C)
Storage temperature	–13 to 158°F (–25 to 70°C)
Relativehumidity	10 to 85% (noncondensing)
Operating altitude	Up to 10,000 ft (3049 m)
Storage altitude	Up to 15,000 ft (4573 m)
Power Requirements	
Power consumption	55W, 190 Btus per hour
DC input voltage	-36 to -72 VDC
Wire gauge for power connection	18 AWG (6 AWG for protective earth)
Branch circuit protection	5A
Physical Dimensions	
Weight	10.5 lb (4.8)
Dimensions (H x D x W)	1.75 x 14.4 x 17.5 in. (4.45 x 36.58 x 44.45 cm)

Table A-4 Fiber-Port Specifications for Catalyst 3550-24-FX Switches

Fiber-Port Power Levels	
Optical transmitter wavelength	1300 nm[1]
Optical receiver sensitivity	–14 dBm[2]
Optical transmitter power for 50/125-micron cabling	–19 to –14 dBm
Optical transmitter power for 62.5/125-micron cabling	–19 to –14 dBm

1. nm = nanometers
2. dBm = decibel milliwatt

Table A-5 Catalyst 3550 Switch Agency Approvals

Safety	EMC
UL to UL 60950, Third Edition	FCC Part 15 Class A
c-UL to CAN/CSA -C22.2 No. 60950-00, Third Edition	EN 55022 Class A (CISPR 22 Class A)
TUV/GS to EN 60950:2000	VCCI Class A
CB to IEC 60950 with all country deviations	AS/NZS 3548 Class A
NOM to NOM-019-SCFI	BSMI
CE Marking	CE Marking

Table A-6 Catalyst 3550-24-DC Switch Agency Approvals

NEBS
Bellcore GR-1089-CORE
Bellcore GR-63-CORE
Bellcore SR-3580 Level 3

Connector and Cable Specifications

This appendix describes the Catalyst 3550 switch ports and the cables and adapters that you use to connect the switch to other devices.

Connector Specifications

These sections describe the connectors used with the Catalyst 3550 switches.

10/100/1000 Ports

The 10/100/1000 Ethernet ports on Catalyst 3550 switches use standard RJ-45 connectors. Figure B-1 shows the pinout.

Connecting to 10BASE-T- and 100BASE-TX-Compatible Devices

When connecting the ports to 10BASE-T- and 100BASE-TX-compatible devices, such as servers, workstations, and routers, you can use a two or four twisted-pair, straight-through cable wired for 10BASE-T and 100BASE-TX. Figure B-7 shows the two twisted-pair, straight-through cable schematics. Figure B-9 shows the four twisted-pair, straight-through cable schematics.

When connecting the ports to 10BASE-T- and 100BASE-TX-compatible devices, such as switches or repeaters, you can use a two or four twisted-pair, crossover cable. Figure B-8 shows the two twisted-pair, crossover cable schematics. Figure B-12 shows the four twisted-pair, crossover cable schematics.

You can use Category 3, 4, or 5 cabling when connecting to 10BASE-T-compatible devices. You must use Category 5 cabling when connecting to 100BASE-TX-compatible devices.

Connecting to 1000BASE-T Devices

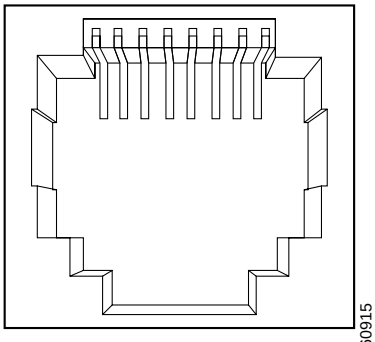
When connecting the ports to 1000BASE-T devices, such as servers, workstations, and routers, you must use a four twisted-pair, Category 5, straight-through cable wired for 10BASE-T, 100BASE-TX, and 1000BASE-T. Figure B-11 shows the straight-through cable schematics.

When connecting the ports to other devices, such as switches or repeaters, you must use a four twisted-pair, Category 5, crossover cable. Figure B-12 shows the crossover cable schematics.

Note Be sure to use a four twisted-pair, Category 5 cable when connecting to a 1000BASE-T-compatible device.

Note Use a straight-through cable to connect two ports only when one port is designated with an X. Use a crossover cable to connect two ports when both ports are designated with an X or when both ports do not have an **X**.

Figure B-1 10/100/1000 Port Pinouts

Pin	Label	1 2 3 4 5 6 7 8
1	TP0+	
2	TP0-	
3	TP1+	
4	TP2+	
5	TP2-	
6	TP1-	
7	TP3+	
8	TP3-	

60915

10/100 Ports

The 10/100 Ethernet ports use standard RJ-45 connectors and Ethernet pinouts with internal crossovers, as shown by an **X** in the port name. These ports have the transmit (TD) and receive (RD) signals internally crossed so that a twisted-pair straight-through cable and adapter can be attached to the port. Figure B-2 shows the pinout.

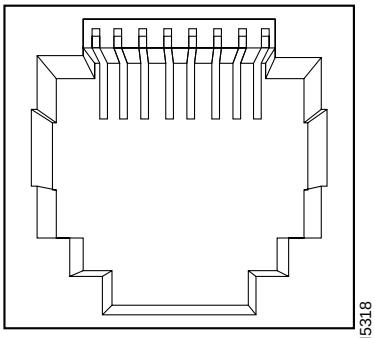
When connecting 10/100 ports to compatible devices, such as servers, workstations, and routers, you can use a two or four twisted-pair, straight-through cable wired for 10BASE-T and 100BASE-TX. Figure B-7 shows the two twisted-pair, straight-through cable schematics. Figure B-9 shows the four twisted-pair, straight-through cable schematics.

When connecting the ports to other devices, such as switches or repeaters, you can use a two or four twisted-pair, crossover cable. Figure B-8 shows the two twisted-pair, crossover cable schematics. Figure B-9 shows the four twisted-pair, crossover cable schematics.

You can use Category 3, 4, or 5 cabling when connecting to 10BASE-T-compatible devices. You must use Category 5 cabling when connecting to 100BASE-TX-compatible devices.

Note Use a straight-through cable to connect two ports only when one port is designated with an X. Use a crossover cable to connect two ports when both ports are designated with an X or when both ports do not have an **X**.

Figure B-2 10/100 Port Pinouts

Pin	Label	1 2 3 4 5 6 7 8
1	RD+	
2	RD-	
3	TD+	
4	NC	
5	NC	
6	TD-	
7	NC	
8	NC	

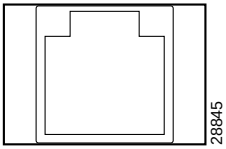
H5318

100BASE-FX Ports

The 100BASE-FX ports use MT-RJ connectors, as shown in Figure B-3. The 100BASE-FX ports use 50/125- or 62.5/125-micron multimode fiber-optic cabling.

You can connect a 100BASE-FX port to an SC or ST port on a target device by using one of the MT-RJ fiber-optic patch cables listed in Table B-1. Use the Cisco part numbers in Table B-1 to order the patch cables that you need.

Figure B-3 MT-RJ Connector



28845

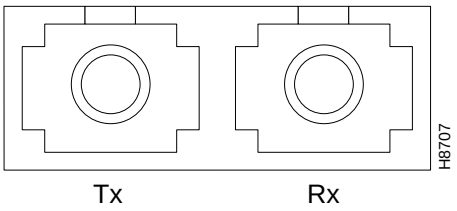
Table B-1 MT-RJ Patch Cables for 100BASE-FX Connections

Type	Cisco Part Number
1-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-1M
3-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-3M
5-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-5M
1-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-1M
3-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-3M
5-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-5M

1000BASE-X GBIC Module Ports

1000BASE-X Gigabit Interface Converter (GBIC) module ports use duplex SC connectors, as shown in Figure B-4.

Figure B-4 1000BASE-X SC Connector

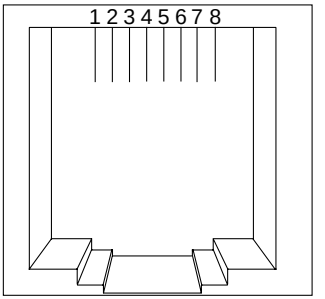


1000BASE-T GBIC Module Port

The 1000BASE-T GBIC module port uses one RJ-45 connector, as shown in Figure B-5.

Figure B-5 1000BASE-T Connector

Pin	Label
1	TP0+
2	TP0-
3	TP1+
4	TP2+
5	TP2-
6	TP1-
7	TP3+
8	TP3-



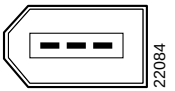
34751

GigaStack GBIC Module Ports

The GigaStack GBIC module ports use proprietary connectors, as shown in Figure B-6. The GigaStack GBIC cables are proprietary, high-data-rate cables with enhanced signal integrity and EMI protection.

Caution Do not use standard IEEE 1394 cables with the GigaStack GBIC.

Figure B-6 GigaStack Connector



22084

Console Port

The console port uses an 8-pin RJ-45 connector, described in Table B-2 and Table B-3. The supplied RJ-45-to-DB-9 adapter cable is used to connect the console port of the switch to a console PC. You need to provide a RJ-45-to-DB-25 female DTE adapter if you want to connect the switch console port to a terminal.

You can order a kit (part number ACS-DSBUASYN=) containing that adapter from Cisco. For console port and adapter pinout information, see Table B-2 and Table B-3.

Cable and Adapter Specifications

These sections describe the cables and adapters used with Catalyst 3550 switches.

Two Twisted-Pair Cable Pinouts

Figure B-7 and Figure B-8 show the schematics of two twisted-pair cables for 10/100 ports.

Figure B-7 Two Twisted-Pair Straight-Through Cable Schematic

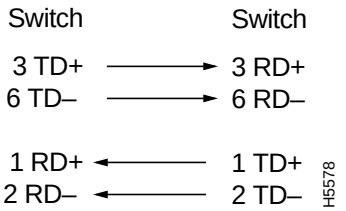
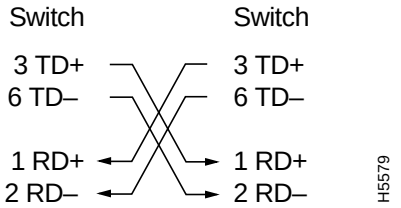


Figure B-8 Two Twisted-Pair Crossover Cable Schematic



Four Twisted-Pair Cable Pinouts for 10/100 Ports

Figure B-9 and Figure B-10 show the schematics of four twisted-pair cables for 10/100 ports.

Figure B-9 Four Twisted-Pair Straight-Through Cable Schematic for 10/100 Ports

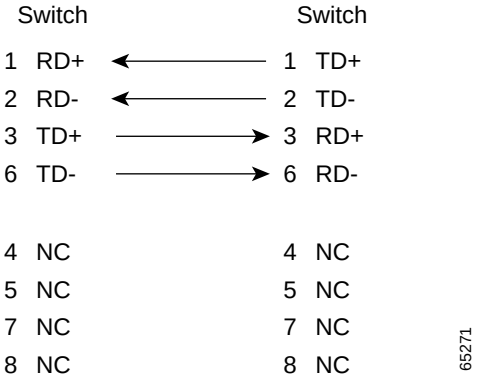
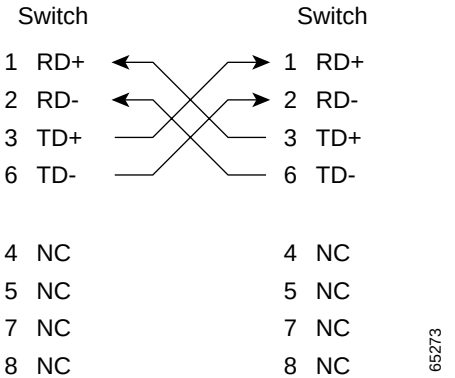


Figure B-10 Four Twisted-Pair Crossover Cable Schematic for 10/100 Ports



Four Twisted-Pair Cable Pinouts for 1000BASE-T Ports

Figure B-11 and Figure B-12 show the schematics of four twisted-pair cables for 10/100/1000 ports on Catalyst 2950T-24 switches.

Figure B-11 Four Twisted-Pair Straight-Through Cable Schematic for 10/100/1000 Ports

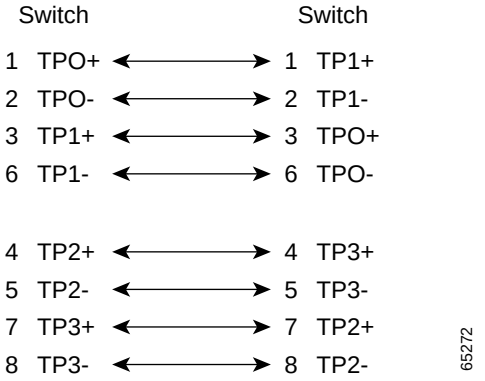
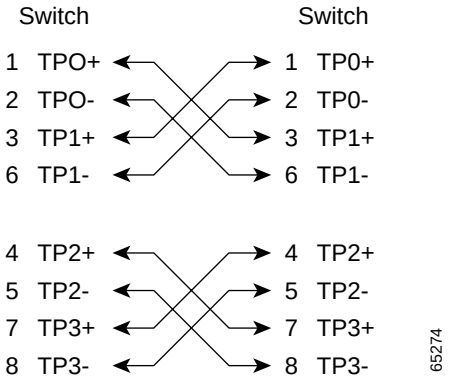


Figure B-12 Four Twisted-Pair Crossover Cable Schematics for 10/100/1000 Ports



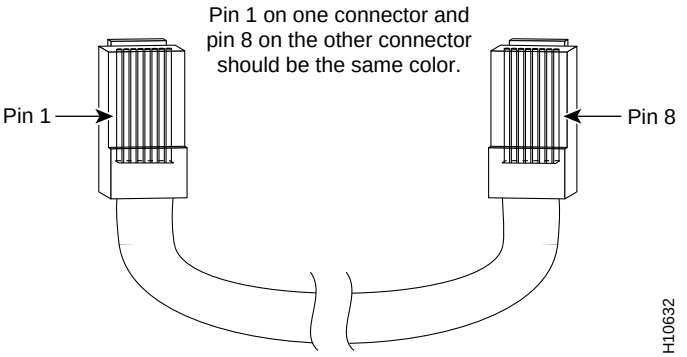
Rollover Cable and Adapter Pinouts

This section describes how to identify a rollover cable and also describes the adapter pinouts.

Identifying a Rollover Cable

To identify a rollover cable, compare the two modular ends of the cable. Hold the cable ends side-by-side, with the tab at the back. The wire connected to the pin on the outside of the left plug should be the same color as the wire connected to the pin on the outside of the right plug. (See Figure B-13.)

Figure B-13 Identifying a Rollover Cable



Adapter Pinouts

Table B-2 lists the pinouts for the console port, the RJ-45-to-DB-9 adapter cable, and the console device.

Table B-2 Console Port Signaling Using a DB-9 Adapter

Switch Console Port (DTE)	RJ-45-to-DB-9 Terminal Adapter	Console Device
Signal	**DB-9 Pin**	**Signal**
RTS	8	CTS
DTR	6	DSR
TxD	2	RxD
GND	5	GND
GND	5	GND

Table B-2 Console Port Signaling Using a DB-9 Adapter (continued)

Switch Console Port (DTE)	RJ-45-to-DB-9 Terminal Adapter	Console Device
Signal	**DB-9 Pin**	**Signal**
RxD	3	TxD
DSR	4	DTR
CTS	7	RTS

Table B-3 lists the pinouts for the console port, RJ-45-to-DB-25 female DTE adapter, and the console device.

Note The RJ-45-to-DB-25 female DTE adapter is not supplied with the switch. You can order a kit (part number ACS-DSBUASYN=) containing this adapter from Cisco.

Table B-3 Console Port Signaling Using a DB-25 Adapter

Switch Console Port (DTE)	RJ-45-to-DB-25 Terminal Adapter	Console Device
Signal	**DB-25 Pin**	**Signal**
RTS	5	CTS
DTR	6	DSR
TxD	3	RxD
GND	7	GND
GND	7	GND
RxD	2	TxD
DSR	20	DTR
CTS	4	RTS

Translated Safety Warnings

This appendix repeats in multiple languages the warnings in this guide. These translated warnings can be used with other documents related to this guide.

Attaching the Cisco RPS 300 (model PWR300-AC-RPS-N1)

Warning	**Attach only the Cisco RPS 300 (model PWR300-AC-RPS-N1) to the RPS receptacle.**
Waarschuwing	**Slechts de Cisco RPS 300 (model PWR300-AC-RPS-N1) aan de RPS contactdoos verbinden.**
Varoitus	**Kiinnitä RPS-vastakappaleeseen vain Cisco RPS 300 (malli PWR300-AC-RPS-N1).**
Avertissement	**Raccordez le bloc d'alimentation Cisco RPS 300 (modèle PWR300-AC-RPS-N1) uniquement au connecteur RPS.**
Warnung	**An die RPS-Steckhülse darf nur das Cisco RPS 300 (Modell PWR300-AC-RPS-N1) angeschlossen werden.**

Avvertenza **Collegare soltanto il Cisco RPS 300 (modello PWR300-AC-RPS-N1) alla presa RPS.**

Advarsel! **Koble bare Cisco RPS 300 (modell PWR300-AC-RPS-N1) til RPS-stikkontakten.**

Aviso **Anexe o RPS 300 Cisco (modelo PWR300-AC-RPS-N1) apenas ao receptáculo RPS.**

Aviso **Sólo conecte el Cisco RPS 300 (modelo PWR300-AC-RPS-N1) al receptáculo RPS.**

Varning! **Koppla endast Ciscos RPS 300 (modell PWR300-AC-RPS-N1) till RPS-uttaget.**

Service Personnel Warning

Warning **This equipment is to be installed and maintained by service personnel only as defined by AS/NZS 3260 Clause 1.2.14.3 Service Personnel.**

Waarschuwing **Deze apparatuur mag slechts geïnstalleerd en onderhouden worden door servicepersoneel conform de definitie van AS/NZS 3260 Clausule 1.2.14.3 Service Personnel.**

Varoitus **Tämän laitteen saa asentaa tai huoltaa ainoastaan Australiassa ja Uudessa Seelannissa sovellettavan AS/NZS 3260 -standardin kohdan 1.2.14.3 Service Personnel määrittelemä huoltohenkilöstö.**

Attention **Cet équipement ne doit être installé et entretenu que par du personnel d'entretien comme défini par la réglementation AS/NZS 3260 Clause 1.2.14.3 Service Personnel.**

Warnung **Dieses Gerät darf nur von Wartungspersonal gemäß AS/NZS-Definition 3260, Paragraph 1.2.14.3, "Service Personnel", installiert und gewartet werden.**

Avvertenza **Questo apparecchio deve essere installato e mantenuto in efficienza esclusivamente da personale tecnico che soddisfi i requisiti specificati nella sezione 1.2.14.3 sul 'Service Personnel' contenuta nelle norme AS/NZS 3260.**

Advarsel **Installasjon og vedlikehold av dette utstyret skal kun foretas av vedlikeholdspersonell som definert i AS/NZS 3260, klausul 1.2.14.3 Service Personnel.**

Aviso **Este equipamento deverá ser instalado e reparado apenas por pessoal de manutenção qualificado, conforme estipulado em AS/NZS 3260 Cláusula 1.2.14.3 Service Personnel.**

Advertencia **Este equipo se debe instalar y mantener solamente por personal de servicio, según definido por AS/NZS 3260 Cláusula 1.2.14.3 Service Personnel.**

Varning! **Installation och underhåll av denna utrustning får endast utföras av servicepersonal enligt definition i AS/NZS 3260 klausul 1.2.14.3 Service Personnel.**

Qualified Personnel Warning

Warning **Only trained and qualified personnel should be allowed to install or replace this equipment**

Waarschuwing **Installatie en reparaties mogen uitsluitend door getraind en bevoegd personeel uitgevoerd worden.**

Varoitus	**Ainoastaan koulutettu ja pätevä henkilökunta saa asentaa tai vaihtaa tämän laitteen.**
Avertissement	**Tout installation ou remplacement de l'appareil doit être réalisé par du personnel qualifié et compétent.**
Achtung	**Gerät nur von geschultem, qualifiziertem Personal installieren oder auswechseln lassen.**
Avvertenza	**Solo personale addestrato e qualificato deve essere autorizzato ad installare o sostituire questo apparecchio.**
Advarsel	**Kun kvalifisert personell med riktig opplæring bør montere eller bytte ut dette utstyret.**
Aviso	**Este equipamento deverá ser instalado ou substituído apenas por pessoal devidamente treinado e qualificado.**
¡Atención!	**Estos equipos deben ser instalados y reemplazados exclusivamente por personal técnico adecuadamente preparado y capacitado.**
Varning	**Denna utrustning ska endast installeras och bytas ut av utbildad och kvalificerad personal.**

Installation Warning

Warning	**Read the installation instructions before you connect the system to its power source.**
Waarschuwing	**Raadpleeg de installatie-aanwijzingen voordat u het systeem met de voeding verbindt.**

Varoitus	**Lue asennusohjeet ennen järjestelmän yhdistämistä virtalähteeseen.**
Attention	**Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.**
Warnung	**Lesen Sie die Installationsanweisungen, bevor Sie das System an die Stromquelle anschließen.**
Avvertenza	**Consultare le istruzioni di installazione prima di collegare il sistema all'alimentatore.**
Advarsel	**Les installasjonsinstruksjonene før systemet kobles til strømkilden.**
Aviso	**Leia as instruções de instalação antes de ligar o sistema à sua fonte de energia.**
¡Advertencia!	**Ver las instrucciones de instalación antes de conectar el sistema a la red de alimentación.**
Varning!	**Läs installationsanvisningarna innan du kopplar systemet till dess strömförsörjningsenhet.**

警告　システムを電源に接続する前に、インストレーションについての説明書を必ずお読みください。

Jewelry Removal Warning

Warning **Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.**

Waarschuwing **Alvorens aan apparatuur te werken die met elektrische leidingen is verbonden, sieraden (inclusief ringen, kettingen en horloges) verwijderen. Metalen voorwerpen worden warm wanneer ze met stroom en aarde zijn verbonden, en kunnen ernstige brandwonden veroorzaken of het metalen voorwerp aan de aansluitklemmen lassen.**

Varoitus **Ennen kuin työskentelet voimavirtajohtoihin kytkettyjen laitteiden parissa, ota pois kaikki korut (sormukset, kaulakorut ja kellot mukaan lukien). Metalliesineet kuumenevat, kun ne ovat yhteydessä sähkövirran ja maan kanssa, ja ne voivat aiheuttaa vakavia palovammoja tai hitsata metalliesineet kiinni liitäntänapoihin.**

Attention **Avant d'accéder à cet équipement connecté aux lignes électriques, ôter tout bijou (anneaux, colliers et montres compris). Lorsqu'ils sont branchés à l'alimentation et reliés à la terre, les objets métalliques chauffent, ce qui peut provoquer des blessures graves ou souder l'objet métallique aux bornes.**

Warnung **Vor der Arbeit an Geräten, die an das Netz angeschlossen sind, jeglichen Schmuck (einschließlich Ringe, Ketten und Uhren) abnehmen. Metallgegenstände erhitzen sich, wenn sie an das Netz und die Erde angeschlossen werden, und können schwere Verbrennungen verursachen oder an die Anschlußklemmen angeschweißt werden.**

Avvertenza **Prima di intervenire su apparecchiature collegate alle linee di alimentazione, togliersi qualsiasi monile (inclusi anelli, collane, braccialetti ed orologi). Gli oggetti metallici si riscaldano quando sono collegati tra punti di alimentazione e massa: possono causare ustioni gravi oppure il metallo può saldarsi ai terminali.**

Advarsel **Fjern alle smykker (inkludert ringer, halskjeder og klokker) før du skal arbeide på utstyr som er koblet til kraftledninger. Metallgjenstander som er koblet til kraftledninger og jord blir svært varme og kan forårsake alvorlige brannskader eller smelte fast til polene.**

Aviso **Antes de trabalhar em equipamento que esteja ligado a linhas de corrente, retire todas as jóias que estiver a usar (incluindo anéis, fios e relógios). Os objectos metálicos aquecerão em contacto com a corrente e em contacto com a ligação à terra, podendo causar queimaduras graves ou ficarem soldados aos terminais.**

¡Advertencia! **Antes de operar sobre equipos conectados a líneas de alimentación, quitarse las joyas (incluidos anillos, collares y relojes). Los objetos de metal se calientan cuando se conectan a la alimentación y a tierra, lo que puede ocasionar quemaduras graves o que los objetos metálicos queden soldados a los bornes.**

Varning! **Tag av alla smycken (inklusive ringar, halsband och armbandsur) innan du arbetar på utrustning som är kopplad till kraftledningar. Metallobjekt hettas upp när de kopplas ihop med ström och jord och kan förorsaka allvarliga brännskador; metallobjekt kan också sammansvetsas med kontakterna.**

Stacking the Chassis Warning

Warning **Do not stack the chassis on any other equipment. If the chassis falls, it can cause severe bodily injury and equipment damage.**

Waarschuwing **Het chassis mag niet op andere apparatuur gestapeld te worden. Als het chassis mocht vallen, kan dit ernstig lichamelijk letsel en beschadiging van de apparatuur veroorzaken.**

Varoitus **Älä aseta asennuspohjaa minkään muun laitteen päälle. Asennuspohja voi pudotessaan aiheuttaa vaikean ruumiinvamman tai laitevaurion.**

Avertissement **Ne placez pas ce châssis sur un autre appareil. En cas de chute, il pourrait provoquer de graves blessures corporelles et d'importants dommages.**

Achtung **Das Gehäuse nicht auf andere Geräte stellen. Wenn das Gehäuse herunterfällt, besteht Gefahr schwerer Personenverletzungen und Geräteschäden.**

Avvertenza **Non collocare lo chassis su nessun altro apparecchio. Se lo chassis cade, può causare lesioni gravi e danni alle apparecchiature.**

Advarsel **Stable ikke kabinettet oppå annet utstyr. Hvis kabinettet faller, kan det forårsake alvorlig skade på mennesker og utstyr.**

Aviso **Não coloque o chassis em cima de qualquer outro equipamento. Se o chassis cair, poderá causar ferimentos graves e danos no equipamento.**

¡Atención! **No apilar los chasis sobre ningún otro equipo. Si el chasis se cae al suelo puede causar graves lesiones físicas y daños al equipo.**

Varning **Placera inte chassit ovanpå annan utrustning. Om chassit faller kan allvarlig kroppsskada såväl som skada på utrustningen uppstå.**

Main Disconnecting Device

Warning **The plug-socket combination must be accessible at all times because it serves as the main disconnecting device.**

Waarschuwing **De combinatie van de stekker en het elektrisch contactpunt moet te allen tijde toegankelijk zijn omdat deze het hoofdmechanisme vormt voor verbreking van de aansluiting.**

Varoitus **Pistoke/liitinkohta toimii pääkatkaisumekanismina. Pääsy siihen on pidettävä aina esteettömänä.**

Attention **La combinaison de prise de courant doit être accessible à tout moment parce qu'elle fait office de système principal de déconnexion.**

Warnung **Der Netzkabelanschluß am Gerät muß jederzeit zugänglich sein, weil er als primäre Ausschaltvorrichtung dient.**

Avvertenza **Il gruppo spina-presa deve essere sempre accessibile, poiché viene utilizzato come dispositivo di scollegamento principale.**

Advarsel **Kombinasjonen støpsel/uttak må alltid være tilgjengelig ettersom den fungerer som hovedfrakoplingsenhet.**

Aviso **A combinação ficha-tomada deverá ser sempre acessível, porque funciona como interruptor principal.**

¡Advertencia! **El conjunto de clavija y toma ha de encontrarse siempre accesible ya que hace las veces de dispositivo de desconexión principal.**

Varning! **Man måste alltid kunna komma åt stickproppen i uttaget, eftersom denna koppling utgör den huvudsakliga frånkopplingsanordningen.**

Overtemperature Warning

Warning **To prevent the switch from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 113°F (45°C). To prevent airflow restriction, allow at least 3 inches (7.6 cm) of clearance around the ventilation openings.**

Waarschuwing **Om oververhitting van de schakelaar te voorkomen, mag u die niet bedienen in een ruimte die de maximale aanbevolen omgevingstemperatuur van 113 F (45°C) overschrijdt. Om beperking van de luchtstroom te voorkomen, dient u ten minste 3 inch (7,6 cm) speling te laten rondom de ventilatie-openingen.**

Varoitus **Estääksesi kytkimen ylikuumenemisen älä käytä sitä sellaisissa paikoissa, joiden lämpötila ylittää ympäristön enimmäislämpötilaksi suositellun 45°C. Jätä vähintään 7,6 cm:n vapaa tila tuuletusaukkojen ympärille, jotta ilma pääsee vapaasti virtaamaan.**

Attention **Pour éviter une surchauffe du commutateur, ne pas le faire fonctionner dans un local dont la température ambiante dépasse le maximum recommandé de 45°C (113 F). Pour faciliter la circulation d'air, aménager un dégagement d'au moins 7,6 cm (3 pouces) autour des bouches d'aération.**

Warnung **Um eine Überhitzung des Schalters zu vermeiden, ist das System nicht in einem Bereich zu betreiben, in dem die empfohlene Höchsttemperatur von 45°C überschritten wird. Damit der Luftfluß nicht behindert wird, ist ein Freiraum von mindestens 7,6 cm um die Belüftungsöffnungen herum einzuhalten.**

Avvertenza **Per evitare il surriscaldamento dell'interruttore, non usare l'apparecchiatura in un'area che supera la temperatura ambientale minima consigliata di 45°C. Per evitare una limitazione del flusso dell'aria, lasciare come minimo uno spazio libero di 7,6 cm intorno alle aperture di ventilazione.**

Advarsel **For å unngå at bryteren overopphetes skal utstyret ikke brukes på steder hvor anbefalt maks omgivelsestemperatur overstiger 113 grader Farenheit (45°C). La det være minst 3 tommer (7,6 cm) klaring rundt ventilasjonsåpningene for at luftsirkulasjonen skal være uhindret.**

Aviso **Para evitar sobreaquecimento do interruptor, não utilize o equipamento numa àrea que exceda uma temperatura máxima de 45°C. Para evitar o bloqueamento da circulação de ar, deixe pelo menos um espaço de 7.6 cm em volta das aberturas de ventilação.**

¡Advertencia! **Para evitar que el interruptor se recaliente, no se debe usar en áreas cuya temperatura ambiente exceda la máxima recomendada, esto es, 45°C (113°F). Para no entorpecer la corriente de aire, dejar por lo menos 7,6 cm (3 pulgadas) de espacio muerto alrededor de la rejilla de ventilación.**

Varning! **För att undvika överhettning av strömbrytaren skall den inte användas i utrymme vars temperatur överskrider den maximalt rekommenderade omgivningstemperaturen 45°C. Kontrollera att det finns minst 7,6 cm fritt utrymme runt ventilationsöppningarna så att luftflödet inte begränsas.**

Ground Connection Warning

Warning **When installing the unit, the ground connection must always be made first and disconnected last.**

Waarschuwing **Bij de installatie van het toestel moet de aardverbinding altijd het eerste worden gemaakt en het laatste worden losgemaakt.**

Varoitus **Laitetta asennettaessa on maahan yhdistäminen aina tehtävä ensiksi ja maadoituksen irti kytkeminen viimeiseksi.**

Attention **Lors de l'installation de l'appareil, la mise à la terre doit toujours être connectée en premier et déconnectée en dernier.**

Warnung **Der Erdanschluß muß bei der Installation der Einheit immer zuerst hergestellt und zuletzt abgetrennt werden.**

Avvertenza **In fase di installazione dell'unità, eseguire sempre per primo il collegamento a massa e disconnetterlo per ultimo.**

Advarsel **Når enheten installeres, må jordledningen alltid tilkobles først og frakobles sist.**

Aviso **Ao instalar a unidade, a ligação à terra deverá ser sempre a primeira a ser ligada, e a última a ser desligada.**

¡Advertencia! **Al instalar el equipo, conectar la tierra la primera y desconectarla la última.**

Varning! **Vid installation av enheten måste jordledningen alltid anslutas först och kopplas bort sist.**

Grounded Equipment Warning

Warning **This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.**

Waarschuwing **Deze apparatuur hoort geaard te worden Zorg dat de host-computer tijdens normaal gebruik met aarde is verbonden.**

Varoitus **Tämä laitteisto on tarkoitettu maadoitettavaksi. Varmista, että isäntälaite on yhdistetty maahan normaalikäytön aikana.**

Attention **Cet équipement doit être relié à la terre. S'assurer que l'appareil hôte est relié à la terre lors de l'utilisation normale.**

Warnung **Dieses Gerät muß geerdet werden. Stellen Sie sicher, daß das Host-Gerät während des normalen Betriebs an Erde gelegt ist.**

Avvertenza **Questa apparecchiatura deve essere collegata a massa. Accertarsi che il dispositivo host sia collegato alla massa di terra durante il normale utilizzo.**

Advarsel **Dette utstyret skal jordes. Forviss deg om vertsterminalen er jordet ved normalt bruk.**

Aviso **Este equipamento deverá estar ligado à terra. Certifique-se que o host se encontra ligado à terra durante a sua utilização normal.**

¡Advertencia! **Este equipo debe conectarse a tierra. Asegurarse de que el equipo principal esté conectado a tierra durante el uso normal.**

Varning! **Denna utrustning är avsedd att jordas. Se till att värdenheten är jordad vid normal användning.**

警告 この装置はアースを必要とするものです。通常動作時は、ホストがアースされていることを確認してください。

Lightning Activity Warning

Warning **Do not work on the system or connect or disconnect cables during periods of lightning activity.**

Waarschuwing **Tijdens onweer dat gepaard gaat met bliksem, dient u niet aan het systeem te werken of kabels aan te sluiten of te ontkoppelen.**

Varoitus **Älä työskentele järjestelmän parissa äläkä yhdistä tai irrota kaapeleita ukkosilmalla.**

Attention **Ne pas travailler sur le système ni brancher ou débrancher les câbles pendant un orage.**

Warnung **Arbeiten Sie nicht am System und schließen Sie keine Kabel an bzw. trennen Sie keine ab, wenn es gewittert.**

Avvertenza **Non lavorare sul sistema o collegare oppure scollegare i cavi durante un temporale con fulmini.**

Advarsel **Utfør aldri arbeid på systemet, eller koble kabler til eller fra systemet når det tordner eller lyner.**

Aviso **Não trabalhe no sistema ou ligue e desligue cabos durante períodos de mau tempo (trovoada).**

¡Advertencia! **No operar el sistema ni conectar o desconectar cables durante el transcurso de descargas eléctricas en la atmósfera.**

Varning! **Vid åska skall du aldrig utföra arbete på systemet eller ansluta eller koppla loss kablar.**

警告 雷電時には装置の取り扱い、またはケーブルの接続/切り離しを行わないでください。

Product Disposal Warning

Warning **Ultimate disposal of this product should be handled according to all national laws and regulations.**

Waarschuwing **Het uiteindelijke wegruimen van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.**

Varoitus **Tämä tuote on hävitettävä kansallisten lakien ja määräysten mukaisesti.**

Attention **La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.**

Warnung **Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.**

Avvertenza **Lo smaltimento di questo prodotto deve essere eseguito secondo le leggi e regolazioni locali.**

Advarsel **Endelig kassering av dette produktet skal være i henhold til alle relevante nasjonale lover og bestemmelser.**

Aviso **Deitar fora este produto em conformidade com todas as leis e regulamentos nacionais.**

¡Advertencia! **Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.**

Varning! **Vid deponering hanteras produkten enligt gällande lagar och bestämmelser.**

Chassis Warning—Rack-Mounting and Servicing

Warning **To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:**

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Waarschuwing **Om lichamelijk letsel te voorkomen wanneer u dit toestel in een rek monteert of het daar een servicebeurt geeft, moet u speciale voorzorgsmaatregelen nemen om ervoor te zorgen dat het toestel stabiel blijft. De onderstaande richtlijnen worden verstrekt om uw veiligheid te verzekeren:**

- Dit toestel dient onderaan in het rek gemonteerd te worden als het toestel het enige in het rek is.
- Wanneer u dit toestel in een gedeeltelijk gevuld rek monteert, dient u het rek van onderen naar boven te laden met het zwaarste onderdeel onderaan in het rek.
- Als het rek voorzien is van stabiliseringshulpmiddelen, dient u de stabilisatoren te monteren voordat u het toestel in het rek monteert of het daar een servicebeurt geeft.

Varoitus **Kun laite asetetaan telineeseen tai huolletaan sen ollessa telineessä, on noudatettava erityisiä varotoimia järjestelmän vakavuuden säilyttämiseksi, jotta vältytään loukkaantumiselta. Noudata seuraavia turvallisuusohjeita:**

- Jos telineessä ei ole muita laitteita, aseta laite telineen alaosaan.
- Jos laite asetetaan osaksi täytettyyn telineeseen, aloita kuormittaminen sen alaosasta kaikkein raskaimmalla esineellä ja siirry sitten sen yläosaan.
- Jos telinettä varten on vakaimet, asenna ne ennen laitteen asettamista telineeseen tai sen huoltamista siinä.

Attention **Pour éviter toute blessure corporelle pendant les opérations de montage ou de réparation de cette unité en casier, il convient de prendre des précautions spéciales afin de maintenir la stabilité du système. Les directives ci-dessous sont destinées à assurer la protection du personnel :**

- Si cette unité constitue la seule unité montée en casier, elle doit être placée dans le bas.
- Si cette unité est montée dans un casier partiellement rempli, charger le casier de bas en haut en plaçant l'élément le plus lourd dans le bas.
- Si le casier est équipé de dispositifs stabilisateurs, installer les stabilisateurs avant de monter ou de réparer l'unité en casier.

Warnung **Zur Vermeidung von Körperverletzung beim Anbringen oder Warten dieser Einheit in einem Gestell müssen Sie besondere Vorkehrungen treffen, um sicherzustellen, daß das System stabil bleibt. Die folgenden Richtlinien sollen zur Gewährleistung Ihrer Sicherheit dienen:**

- Wenn diese Einheit die einzige im Gestell ist, sollte sie unten im Gestell angebracht werden.
- Bei Anbringung dieser Einheit in einem zum Teil gefüllten Gestell ist das Gestell von unten nach oben zu laden, wobei das schwerste Bauteil unten im Gestell anzubringen ist.
- Wird das Gestell mit Stabilisierungszubehör geliefert, sind zuerst die Stabilisatoren zu installieren, bevor Sie die Einheit im Gestell anbringen oder sie warten.

Avvertenza **Per evitare infortuni fisici durante il montaggio o la manutenzione di questa unità in un supporto, occorre osservare speciali precauzioni per garantire che il sistema rimanga stabile. Le seguenti direttive vengono fornite per garantire la sicurezza personale:**

- Questa unità deve venire montata sul fondo del supporto, se si tratta dell'unica unità da montare nel supporto.
- Quando questa unità viene montata in un supporto parzialmente pieno, caricare il supporto dal basso all'alto, con il componente più pesante sistemato sul fondo del supporto.
- Se il supporto è dotato di dispositivi stabilizzanti, installare tali dispositivi prima di montare o di procedere alla manutenzione dell'unità nel supporto.

Advarsel **Unngå fysiske skader under montering eller reparasjonsarbeid på denne enheten når den befinner seg i et kabinett. Vær nøye med at systemet er stabilt. Følgende retningslinjer er gitt for å verne om sikkerheten:**

- Denne enheten bør monteres nederst i kabinettet hvis dette er den eneste enheten i kabinettet.
- Ved montering av denne enheten i et kabinett som er delvis fylt, skal kabinettet lastes fra bunnen og opp med den tyngste komponenten nederst i kabinettet.
- Hvis kabinettet er utstyrt med stabiliseringsutstyr, skal stabilisatorene installeres før montering eller utføring av reparasjonsarbeid på enheten i kabinettet.

Aviso **Para se prevenir contra danos corporais ao montar ou reparar esta unidade numa estante, deverá tomar precauções especiais para se certificar de que o sistema possui um suporte estável. As seguintes directrizes ajudá-lo-ão a efectuar o seu trabalho com segurança:**

- Esta unidade deverá ser montada na parte inferior da estante, caso seja esta a única unidade a ser montada.
- Ao montar esta unidade numa estante parcialmente ocupada, coloque os itens mais pesados na parte inferior da estante, arrumando-os de baixo para cima.
- Se a estante possuir um dispositivo de estabilização, instale-o antes de montar ou reparar a unidade.

¡Advertencia! **Para evitar lesiones durante el montaje de este equipo sobre un bastidor, o posteriormente durante su mantenimiento, se debe poner mucho cuidado en que el sistema quede bien estable. Para garantizar su seguridad, proceda según las siguientes instrucciones:**

- Colocar el equipo en la parte inferior del bastidor, cuando sea la única unidad en el mismo.
- Cuando este equipo se vaya a instalar en un bastidor parcialmente ocupado, comenzar la instalación desde la parte inferior hacia la superior colocando el equipo más pesado en la parte inferior.
- Si el bastidor dispone de dispositivos estabilizadores, instalar éstos antes de montar o proceder al mantenimiento del equipo instalado en el bastidor.

Varning! **För att undvika kroppsskada när du installerar eller utför underhållsarbete på denna enhet på en ställning måste du vidta särskilda försiktighetsåtgärder för att försäkra dig om att systemet står stadigt. Följande riktlinjer ges för att trygga din säkerhet:**

- Om denna enhet är den enda enheten på ställningen skall den installeras längst ned på ställningen.
- Om denna enhet installeras på en delvis fylld ställning skall ställningen fyllas nedifrån och upp, med de tyngsta enheterna längst ned på ställningen.
- Om ställningen är försedd med stabiliseringsdon skall dessa monteras fast innan enheten installeras eller underhålls på ställningen.

Redundant Power System Connection Warning

Warning **If a redundant power system (RPS) is not connected to the switch, install an RPS connector cover on the back of the switch.**

Waarschuwing **Als er geen redundant voedingssysteem (RPS) aan de schakelaar is gekoppeld, dient u een RPS-connectorkapje op de achterkant van de schakelaar te installeren.**

Varoitus **Jos korvautuvaa tehojärjestelmää (redundant power system, RPS) ei ole liitetty kytkimeen, kiinnitä RPS-liittimen suojus kytkimen takapuolelle.**

Attention **Si un système d'alimentation électrique redondant (RPS) n'est pas connecté au commutateur, installez un cache de connecteur RPS à l'arrière du commutateur.**

Warnung **Wenn keine redundante Stromversorgung (RSV) an den Schalter angeschlossen ist, eine RSV-Steckerabdeckung an der Rückseite des Schalters anbringen.**

Avvertenza **Se un sistema RPS (Redundant Power System) di alimentazione ridondante non è collegato al dispositivo switch, installare un copri-connettore RPS sul retro del switch.**

Advarsel **Dersom et redundant strømsystem (Redundant Power System -RPS) ikke er koblet til bryteren, skal det installeres et RPS-koblingsdeksel på baksiden av bryteren.**

Aviso **Se um sistema de alimentação redundante (RPS) não estiver conectado a um switch, instale uma capa de conector RPS na parte de trás do switch.**

¡Advertencia! **Si no se conecta un sistema de potencia redundante (RPS) al interruptor, instale una cubierta de conector RPS en la parte posterior del interruptor.**

Varning! **Om ett redundant strömförsörjningssystem (redundant power system, RPS) inte finns anslutet till omkopplaren skall ett RPS-kontaktskydd installeras på baksidan av omkopplaren.**

Switch Installation Warning

Warning **To comply with safety regulations, mount switches on a wall with the front panel facing up.**

Waarschuwing **Om te voldoen aan de veiligheidsvoorschriften dient u de schakelaars op een muur te monteren met het voorpaneel omhoog.**

Varoitus **Turvallisuusmääräykset edellyttävät, että kytkimet kiinnitetään seinään etupaneeli ylöspäin.**

Attention **Pour satisfaire aux dispositions de sécurité, installez les commutateurs muraux avec le panneau frontal vers le haut.**

Warnung **Zur Einhaltung der Sicherheitsvorschriften die Schalter so an einer Wand montieren, dass die Frontplatte nach oben zeigt.**

Avvertenza **In conformità ai regolamenti di sicurezza, installare i dispositivi switch a muro con il pannello frontale rivolto in su.**

Advarsel **For å etterkomme sikkerhetsreglene skal brytere monteres på en vegg med frontpanelet vendt opp.**

Aviso **Para cumprir com os regulamentos de segurança, faça a montagem de switches em uma parede com o painel frontal virado para cima.**

¡Advertencia! **Para cumplir con las reglas de seguridad, instale los interruptores en una pared con el panel del frente hacia arriba.**

Varning! **För att uppfylla säkerhetsföreskrifter skall omkopplarna monteras på en vägg med frampanelen riktad uppåt.**

Catalyst 3550-24-DC Service Requirement

Warning **The Catalyst 3550-24-DC contains no field-replaceable units (FRUs). Do not open the chassis or attempt to remove or replace any components. For information about obtaining service for this unit, contact your reseller or Cisco sales representative.**

Waarschuwing **De Catalyst 3550-24-DC bevat geen FRU's (field-replaceable units ofwel veldvervangbare eenheden). Open het chassis niet en probeer geen onderdelen te verwijderen of te vervangen. Voor informatie omtrent het onderhoud voor deze eenheid dient u contact op te nemen met uw doorverkoper of verkoopvertegenwoordiger van Cisco.**

Varoitus **Catalyst 3550-24-DC ei sisällä kenttäkorjattavia laitteita. Runkoa ei saa avata, eikä osia saa yrittää poistaa tai korjata. Laitteen huoltoa koskevia tietoja saa jälleenmyyjältä tai Ciscon myyntiedustajalta.**

Attention **Le Catalyst 3550-24-DC ne dispose pas d'unités remplaçables sur site (FRU). Il est recommandé de ne pas ouvrir le châssis ni de retirer ou remplacer des composants. Pour plus de détails sur la maintenance de cette unité, contactez votre revendeur ou votre ingénieur commercial Cisco.**

Warnung **Der Catalyst 3550-24-DC enthält keine vor Ort austauschbaren Einheiten (FRUs). Das Gehäuse nicht öffnen und Komponenten nicht entfernen oder ersetzen. Serviceinformationen zu dieser Einheit erhalten Sie von Ihrem Wiederverkäufer oder von Ihrem Cisco-Vertreter.**

Avvertenza **Catalyst 3550-24-DC non ha componenti sostituibili sul posto (FRU). Non aprite lo chassis o tentate di rimuovere o sostituire componenti. Per maggiori informazioni sui servizi di assistenza per questo dispositivo, contattate il vostro rivenditore Cisco.**

Advarsel **Catalyst 3550-24-DC inneholder ingen kunde-utskiftbare deler (FRU-deler). Gjør ikke forsøk på å åpne kabinettet eller fjerne eller skifte ut noen av komponentene. Ta kontakt med forhandleren eller en Cisco-salgsrepresentant for informasjon om hvor det kan utføres service på enheten.**

Aviso **O interruptor Catalisador 3550-24-DC não contém nenhuma unidade substituível em campo. Não abrir o chassis ou tentar remover ou substituir quaisquer componentes. Para mais informações sobre a manutenção desta unidade, contactar o seu revendedor ou um representante de vendas da Cisco.**

¡Advertencia! **El Catalyst 3550-24-DC no contiene componentes reemplazables en las instalaciones (Field-Replaceable Units, FRU). No abra el chasis ni intente reemplazar componentes. Para más información sobre cómo reparar este aparato, póngase en contacto con su distribuidor o representante de Cisco.**

Varning! **Catalyst 3550-24-DC innehåller inte några enheter som kan bytas ut på fältet. Öppna inte chassit och försök inte heller att ta bort eller byta ut några delar. Kontakta återförsäljaren eller representanten för Cisco om du behöver information om service av enheten.**

Restricted Access Warning

Warning	**This equipment is to be installed in a restricted access area.**
Waarschuwing	**De uitrusting dient geïnstalleerd te worden in een gebied met beperkte toegang.**
Varoitus	**Laite tulee asentaa tilaan, johon on rajoitettu pääsy.**
Attention	**Cet équipement doit être installé uniquement dans une zone à accès limité.**
Warnung	**Die Ausrüstung muß in einem Bereich installiert werden, der gegen unbefugtes Betreten geschützt ist.**
Avvertenza	**Installate questo apparato unicamente in zone di accesso regolamentate.**
Advarsel	**Utstyret skal installeres på et sted med begrenset adgang.**
Aviso	**O equipamento é para ser instalado numa área de acesso restrito.**
¡Advertencia!	**El equipo debe instalarse en una zona de acceso restringido.**
Varning!	**Utrustningen måste installeras på plats med åtkomst endast för behörig personal.**

Shielded Ethernet Cables Warning

Warning	**Ethernet cables must be shielded when used in a central office environment.**
Waarschuwing	**Ethernetkabels dienen beveiligd te worden als ze in een centrale kantooromgeving worden gebruikt.**
Varoitus	**Ethernet-kaapelit täytyy suojata, kun niitä käytetään yleisessä toimistoympäristössä.**
Attention	**Pour une utilisation en site central, les câbles Ethernet doivent être impérativement blindés.**
Warnung	**Ethernet-Kabel müssen abgeschirmt werden, wenn sie in einer Zentrale eingesetzt werden.**
Avvertenza	**I cavi Ethernet devono essere schermati se utilizzati in un ambiente di ufficio centrale.**
Advarsel	**Ethernet-kabler skal være skjermet når de brukes i et sentralt kontormiljø.**
Aviso	**Os cabos "Ethernet" deverão estar armados quando usados em ambiente de escritório central.**
¡Advertencia!	**Los cables Ethernet deben estar protegidos cuando se usen dentro de una oficina central.**
Varning!	**Ethernetkablar måste vara avskärmade vid användning i central kontorsmiljö.**

DC Power Disconnection Warning

Warning **Before performing any of the following procedures, ensure that power is removed from the DC circuit. To ensure that all power is OFF, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position.**

Waarschuwing **Voordat u een van de onderstaande procedures uitvoert, dient u te controleren of de stroom naar het gelijkstroom circuit uitgeschakeld is. Om u ervan te verzekeren dat alle stroom UIT is geschakeld, kiest u op het schakelbord de stroomverbreker die het gelijkstroom circuit bedient, draait de stroomverbreker naar de UIT positie en plakt de schakelaarhendel van de stroomverbreker met plakband in de UIT positie vast.**

Varoitus **Varmista, että tasavirtapiirissä ei ole virtaa ennen seuraavien toimenpiteiden suorittamista. Varmistaaksesi, että virta on KATKAISTU täysin, paikanna tasavirrasta huolehtivassa kojetaulussa sijaitseva suojakytkin, käännä suojakytkin KATKAISTU-asentoon ja teippaa suojakytkimen varsi niin, että se pysyy KATKAISTU-asennossa.**

Attention **Avant de pratiquer l'une quelconque des procédures ci-dessous, vérifier que le circuit en courant continu n'est plus sous tension. Pour en être sûr, localiser le disjoncteur situé sur le panneau de service du circuit en courant continu, placer le disjoncteur en position fermée (OFF) et, à l'aide d'un ruban adhésif, bloquer la poignée du disjoncteur en position OFF.**

Warnung **Vor Ausführung der folgenden Vorgänge ist sicherzustellen, daß die Gleichstromschaltung keinen Strom erhält. Um sicherzustellen, daß sämtlicher Strom abgestellt ist, machen Sie auf der Schalttafel den Unterbrecher für die Gleichstromschaltung ausfindig, stellen Sie den Unterbrecher auf AUS, und kleben Sie den Schaltergriff des Unterbrechers mit Klebeband in der AUS-Stellung fest.**

Avvertenza **Prima di svolgere una qualsiasi delle procedure seguenti, verificare che il circuito CC non sia alimentato. Per verificare che tutta l'alimentazione sia scollegata (OFF), individuare l'interruttore automatico sul quadro strumenti che alimenta il circuito CC, mettere l'interruttore in posizione OFF e fissarlo con nastro adesivo in tale posizione.**

Advarsel **Før noen av disse prosedyrene utføres, kontroller at strømmen er frakoblet likestrømkretsen. Sørg for at all strøm er slått AV. Dette gjøres ved å lokalisere strømbryteren på brytertavlen som betjener likestrømkretsen, slå strømbryteren AV og teipe bryterhåndtaket på strømbryteren i AV-stilling.**

Aviso **Antes de executar um dos seguintes procedimentos, certifique-se que desligou a fonte de alimentação de energia do circuito de corrente contínua. Para se assegurar que toda a corrente foi DESLIGADA, localize o disjuntor no painel que serve o circuito de corrente contínua e coloque-o na posição OFF (Desligado), segurando nessa posição a manivela do interruptor do disjuntor com fita isoladora.**

¡Advertencia! **Antes de proceder con los siguientes pasos, comprobar que la alimentación del circuito de corriente continua (CC) esté cortada (OFF). Para asegurarse de que toda la alimentación esté cortada (OFF), localizar el interruptor automático en el panel que alimenta al circuito de corriente continua, cambiar el interruptor automático a la posición de Apagado (OFF), y sujetar con cinta la palanca del interruptor automático en posición de Apagado (OFF).**

Varning! **Innan du utför någon av följande procedurer måste du kontrollera att strömförsörjningen till likströmskretsen är bruten. Kontrollera att all strömförsörjning är BRUTEN genom att slå AV det överspänningsskydd som skyddar likströmskretsen och tejpa fast överspänningsskyddets omkopplare i FRÅN-läget.**

Class 1 Laser Product Warning

Warning **Invisible laser radiation may be emitted from the aperture ports of the 100BASE-FX single-mode supervisor engine module. Avoid exposure and do not stare into open apertures.**

Waarschuwing: **Onzichtbare laserstralen kunnen uit de openingspoorten van de 100BASE-FX enkelkanaals supervisor motormodule komen. Voorkom blootstelling door niet in de open openingen te kijken.**

Varoitus **Näkymätöntä lasersäteilyä voi levitä 100BASE-FX yksitilaisen ohjainmoottorimoduulin aukoista. Avoimien aukkojen tuijottamista ja säteilylle altistumista tulee välttää.**

Avertissement : **des radiations laser invisibles peuvent être émises par les ouvertures des ports du moteur de surveillance 100BASE-FX monomode. Ne regardez jamais à travers ces ouvertures et ne restez jamais devant.**

Warnung: **An den Ausgängen des 100BASE-FX -Single-Mode-Supervisor-Engine-Moduls kann unsichtbare Laserstrahlung emittiert werden. Jeder Kontakt mit der Strahlung und jedes Hineinsehen in die geöffneten Ausgänge ist zu vermeiden.**

Avvertenza. **Delle aperture delle porte del modulo apparato supervisore monomodale 100BASE-FX possono essere emesse radiazioni laser invisibili. Evitare l'esposizione diretta e non guardare nelle aperture.**

Advarsel! **Usynlig laserstråling kan emitteres fra aperturutgangene til 100BASE-FX-maskinens styremodul i enkeltmodus. Unngå eksponering, og stirr ikke inn i åpne aperturer.**

Aviso **É possível que haja emissão de uma radiação de laser invisível a partir das portas dos orifícios do módulo do mecanismo supervisor de modo único 100BASE-FX. Evite expor-se a tal radiação e não fixe o seu olhar nos orifícios abertos.**

Aviso: **Los puertos de apertura del módulo de procesador de supervisión de modo único 100BASE-FX pueden emitir radiación láser invisible. Evite exponerse a la misma y no mire directamente a las aperturas.**

Varning! **Osynlig laserstrålning kan eventuellt avges från öppningsportarna på 1000BASE-FX enkelt läge övervakarmotormodul. Undvik att utsätta dig för strålning och stirra inte in i öppna hål.**

Laser Beam Exposure Warning

Warning **Avoid exposure to the laser beam.**

Waarschuwing **Vermijd blootstelling aan de straal.**

Varoitus **Vältä säteelle altistumista.**

Attention **Eviter toute exposition au faisceau.**

Warnung **Schützen Sie sich vor Strahlung.**

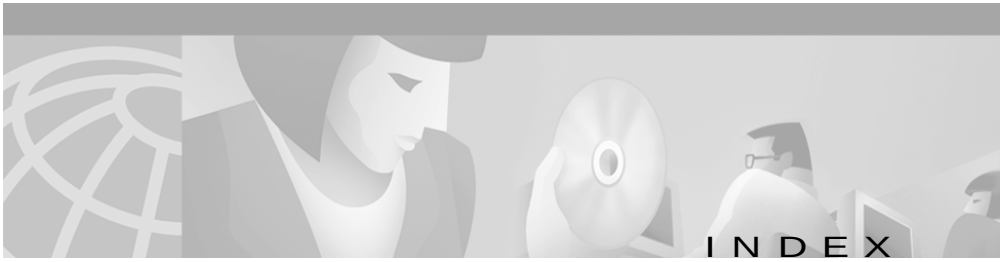
Avvertenza **Evitare l'esposizione al raggio.**

Advarsel **Unngå å bli utsatt for strålen.**

Aviso **Evite exposição ao raio.**

¡Advertencia! **Evitar la exposición al haz.**

Varning! **Utsätt dig inte för laserstrålningen.**



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